
NATIONAL CENTER FOR EDUCATION STATISTICS

Technical Report

July 1999

**Baccalaureate and Beyond
Longitudinal Study:
1993/97 Second Follow-up
Methodology Report**

**U.S. Department of Education
Office of Educational Research and Improvement**

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**U.S. Department of Education
Office of Educational Research and Improvement**

NCES 1999-159

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1. An Overview of the Baccalaureate and Beyond Study

1.1 Purpose of the Study

The Baccalaureate and Beyond Longitudinal Study (B&B:93) tracks the experiences of a cohort of college graduates who received their baccalaureate degree during the 1992-93 academic year and were first interviewed as part of the National Postsecondary Student Aid Study. This group's experiences in the areas of academic enrollments, degree completions, employment, public service, and other adult decisions will be followed for about twelve years. Ultimately, B&B will provide data to assess the outcomes of postsecondary education, graduate and professional program access, and rates of return on investment in education.

The National Center for Education Statistics (NCES) of the Office of Educational Research and Improvement (OERI), U.S. Department of Education, is conducting B&B to comply, in part, with its mandate in Section 404(a) of the National Education Statistics Act of 1994, Title IV of the Improving America's Schools Act of 1994, P.L. 103-382, which states:

The duties of the Center are to collect, analyze, and disseminate statistics and other information related to education in the United States and in other nations, including (1) collecting, acquiring, compiling ..., and disseminating full and complete statistics on the condition and progress of education at the pre-school, elementary, secondary, and postsecondary levels in the United States, including data on ...

- * *student achievement at all levels of education; ...*
- * *educational access to and opportunity for postsecondary education, including data on financial aid to postsecondary students;*
- * *teaching, including data on course-taking, instruction, the conditions of the education workplace, and the supply of, and demand for, teachers, which may include data on the proportions of women and men, cross-tabulated by race or ethnicity, teaching in subjects in which such individuals have been historically underrepresented;*
- * *the learning and teaching environment;...*
- * *the financing and management of education, including data on revenues and expenditures; and ...*

conducting longitudinal studies as well as regular and special surveys and data collections, necessary to report on the condition and progress of education; . . .

1.2 Analytic Objectives

As the 1992-93 cohort of college and university graduates advances through adulthood, the effects of undergraduate education will become increasingly important. These include the effects of attending different types of colleges and universities (comprising different undergraduate programs, curricula and levels of academic achievement) on outcomes such as access to jobs, enrollment in graduate and professional programs, and the rates of return for the individual and society from investments in postsecondary education.

The B&B study provides data to address issues in four major areas of educational policy: educational attainment and outcome; access to graduate and professional schools; rate of return on educational investment; and patterns of preparation for, and engagement in, teaching.

1) Educational attainment and outcome. Continuing education, further degree completion, and entry into the work force are central to attainment and outcome assessment. Questions in this area include:

- X After completing a degree, how long does it take to enter the work force or the next level of postsecondary study? How many degree recipients find work immediately that requires that level of education?
- X How long does it typically take to obtain a position related to the major field of study? Does the required time differ by degree attained? Does it differ by field?
- X How often and for how long are people who completed a baccalaureate degree unemployed? Is unemployment related to field of study?
- X How does the level of educational debt incurred for the completion of undergraduate work affect decisions concerning graduate school, employment, and family formation?

2) Graduate and professional program access. When graduates decide to enter into graduate or professional school after completing the bachelor's degree, they encounter many of the same access and choice questions they faced when they initially entered into postsecondary education. In many areas, people must complete the graduate program to fully participate in the field. In other areas, graduate education enhances the ability to advance in the area, but is not required. The concern, of course, is that those who wish to continue their education beyond the baccalaureate level have the opportunity to do so. Questions to be addressed in this area include:

- X What are the rates of graduate school application, retention and completion?
- X Are people who want to enter graduate school immediately after completing the bachelor's degree able to do so? Why do some graduates delay entry into graduate or professional study? Do these persons persist in seeking to enter and do they succeed in entering later?
- X Are those who want to enter graduate school after gaining some work experience able to do so when they planned, or are they further delayed? Do they carry out their original plan or later decide against graduate school? How long do they delay entry?
- X What proportion of students who have no plans for graduate school at the time they complete the bachelor's degree later change their minds and attempt to enter graduate school? Do these persons have the access they would have had if they had attempted to enter graduate school immediately after completing the bachelor's degree?
- X How long does it take to complete a graduate degree program? What is the level and amount of graduate debt incurred and how does this differ by type and level of degree obtained?

3) Rate of return. Rate of return refers to the financial payoff or other value of the bachelor's degree relative to the expense in time and money of obtaining the degree. B&B examines the rates of return from postsecondary education from the perspectives of both the individual and society. From the perspective of the individual, the rate of return can be measured in terms of monetary reward and personal satisfaction. From the perspective of society, rate of return can be measured in terms of the contribution a student makes to the nation's productivity as well as through community involvement and public service. From the perspective of *both* the individual and society, rate of return can be gauged by the adequacy of the individual's preparation for entry into work and community service and by the individual's acquired ability to gain from and contribute to that experience. Specific questions include:

- X How does employment status and salary differ over time by major field of study and level of degree obtained?
- X How many enter the work force full time in the area for which they are qualified? How long do they remain in that profession? Does this vary by level of degree?
- X Do those who enter public service positions advance in their jobs at the same rate as those in other areas? Does this vary by level of degree?
- X How frequently do degree completers change jobs or careers? Does this vary by level of degree? Does this vary by time since degree completion?
- X Does the degree to which people volunteer vary by degree completed? Does it vary by length of time since degree completion?
- X What proportion of bachelor's degree recipients are able to work effectively and advance in their work without additional schooling? What obstacles are encountered that can only be overcome by additional education?

4) Patterns of teaching. Another important feature of the B&B project is that the sample has been designed to facilitate the study of elementary and secondary school teaching careers. Data will be used to monitor the supply and demand characteristics of the labor market, and career patterns, of teachers, including movements into and away from this profession over time. Many of the same issues discussed earlier, concerning initial aspirations and expectations versus ultimate decisions, will be examined. Additional considerations include measuring quality, noting comparative values, and measuring monetary returns to teaching. Specific questions include:

- X What proportion of college graduates will become teachers, continue to teach, stay in an education-related field, or pursue other careers?
- X What distinguishes college graduates who enter the teaching profession as their first career from those who are attracted to it later in life?
- X What is the rate at which teachers change careers, and how does it compare to career-changing patterns of other professionals? How satisfied are teachers in their careers versus those who are employed in other occupations?

- X What are the potential sources for new teachers, that is, where do those who enter teaching come from (and, of those who left it, where do they go)?

- X How do teachers compare with non-teachers along the lines of gender, race-ethnicity, and socioeconomic backgrounds?

In summary, B&B will contribute to a comprehensive statistical investigation of educational policy issues and help to fulfill NCES's mission, to report on the condition and progress of American education in all its aspects. In recognition of its broad mandate, NCES has expanded its data collection program to investigate educational experiences beyond the traditional span of postsecondary education. *Baccalaureate and Beyond*, with its wealth of data on the consequences of postsecondary education, will contribute to the study of education as a lifelong process.

1.3 Study Design

The B&B:93/97 survey is the second in a series of four planned follow-up interviews of persons who received a bachelor's degree in the 1992-1993 academic year. Baseline data for the B&B cohort were collected as part of the National Postsecondary Student Aid Study (NPSAS:93). The first follow-up interview (B&B:93/94) collected information from respondents one year after they received their bachelor's degree; the second follow-up (B&B:93/97) collected data four years after bachelor's degree receipt. The next interview is planned for nine years after graduation. By the time of the final interview, most students who attend graduate or professional schools should have completed, or nearly completed, their education and be established in their careers.

Data collection for the second follow-up of *Baccalaureate and Beyond* took place from April through December of 1997. The B&B cohort was comprised of 11,192 individuals who were determined eligible for follow-up in 1997. Respondents were interviewed using one of two computer-assisted-interviewing (CAI) systems. The majority of interviews were conducted by telephone interviewers located at a central facility using a computer-assisted telephone interviewing (CATI) system. These interviews were completed between April and July of 1997. The remaining cases were completed by field interviewers using a computer-assisted personal interviewing (CAPI) and case management system (CMS) that was loaded into their individual laptop computers. Most of these interviews were also conducted by telephone but some were administered in person. These cases were completed between July and December of 1997.

2. B&B Sample Design

The B&B sample design represents all postsecondary students in the United States who completed a bachelor's degree in the academic year 1992-93 (AY 93). The B&B:93/94 sample was a subsample of the students selected for the 1993 National Postsecondary Student Aid Study sample, a nationally representative sample of all postsecondary students. The B&B:93/94 sample of baccalaureate degree graduates includes those students in the NPSAS:93 sample who were identified by the institution or during the student interview as having completed a bachelor's degree in the 1992-93 academic year (July 1, 1992 through June 30, 1993).

All NPSAS:93 sample persons who satisfied the subsample requirements were included in the B&B:93/94 sample irrespective of whether these persons were respondents or nonrespondents in NPSAS:93.

2.1 Original NPSAS:93 Sample Design

The NPSAS:93 survey employed a stratified two-stage sample design with postsecondary institutions as the first-stage unit and students within schools as the second stage. To be eligible for inclusion in the sample, an institution was required to satisfy **all** of the following conditions:

- X offer an educational program designed for persons who have completed secondary education;
- X offer an academic, occupational, or vocational program of study;
- X offer access to persons other than those employed by the institution;
- X offer more than just correspondence courses;
- X offer at least one program requiring at least three months or 300 clock hours of instruction; and
- X be located in the 50 states, the District of Columbia, or Puerto Rico.

A total of 1,386 postsecondary institutions were sampled for NPSAS:93; 143 were deemed ineligible based on the criteria outlined above. Of the 1,243 eligible institutions, 88 percent participated by submitting lists of students for selection into the NPSAS:93 sample. Within participating institutions, students eligible for selection into NPSAS:93 were those who were attending the sampled institution and were enrolled either in courses for credit toward a degree or formal award, or in a degree, occupational, or vocation program of at least three months' duration. A total of 82,016 students were selected for the NPSAS:93 sample, with a final eligible sample size of 79,269.

In addition, NPSAS:93 included students in each institution who received a baccalaureate degree between July 1, 1992 and June 30, 1993. (Students who had completed degree requirements prior to July 1, 1992 but had not attended classes after that date were also eligible.) For more details on the original NPSAS:93 sample design, please see the *Methodology Report for the National Postsecondary Student Aid Study, 1992-93* (Loft, et.al., 1995).

2.2 B&B First Follow-up Student Sample

From the NPSAS:93 sample design, 16,316 baccalaureate degree recipients were identified. These students were identified using institutionally provided lists of students who filed for graduation or who indicated having graduated in the 1992-93 academic year during the CATI interview. All 11,810 of the identified students who completed the NPSAS interview were retained for B&B. Student nonrespondents for which NPSAS parent data were available were also retained (372 cases). A ten percent subsample of the remaining eligible cases with at least some data (either data from the institution or partial CATI data) were also retained, for a total of 12,731 eligible cases.

During the data collection period, it became clear that many of the NPSAS nonrespondents retained for B&B were ineligible for the study. Due to the costs involved in contacting ineligible respondents, it was decided to select only a subsample of the NPSAS nonrespondents as potential members of the final B&B sample. All finalized cases and those with pending interviews were excluded from subsampling. Of the remaining 453 cases, a random selection of 200 cases were kept. This sub-sampling process decreased the B&B sample size to 12,478.

After data collection for the first follow-up was complete for both the interview and transcript components, additional cases in the initial sample were found to be ineligible for B&B. More details on how transcript and CATI eligibility were determined can be found in chapter 6 of the *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (Green et al., 1996). People were retained for follow-up in later rounds if they were found to be eligible in either the CATI or the transcript component. Therefore, 10,080 CATI-eligible cases were retained for follow-up plus an additional 1,094 transcript-eligible cases. In addition, 18 cases for which eligibility was unknown for both components were retained. Below, table 2.1 shows the eligibility status for each person according to the transcript and B&B:93/94 CATI components (separately). All together, 11,192 cases were retained for future rounds, including the second follow-up.

Table 2.1.--Transcript and CATI eligibility of those retained for follow-up after B&B:93/94

	B&B:93/94 CATI eligible	B&B:93/94 CATI Ineligible	B&B:93/94 CATI non-interview (Eligibility unknown)
Dispositions			
Total	10,080	267	845
Transcript eligible	9,876	267	827
Transcript ineligible	44	--	--
Transcript nonresponse (Eligibility unknown)	160	--	18

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149).

2.3 B&B Second Follow-up Student Sample

For the second follow-up, the number of interviews completed was 10,093--more than were completed in the first follow-up, despite the fact that 23 of the first follow-up respondents had since died. Table 2.2 below shows the full response patterns for all 11,192 B&B sample members. This table describes each type of response combination to the three rounds of the survey (starting with NPSAS:93) and provides frequencies for each description. As shown, a full 83 percent of the sample responded to all three rounds; these 9,274 respondents are classified as the B&B panel. (The description of the weighting procedures for the panel weight is included in chapter 7.)

Table 2.2.--Response patterns for B&B sample

Description	Response status, by study			Frequency	Percent
	NPSAS:93	B&B:93/94	B&B:93/97		
Total	--	--	--	11,192	100.0
Respondents to all three rounds	Yes	Yes	Yes	9,274	82.9
NPSAS:93 and B&B:93/94 only	Yes	Yes	No	436	3.9
NPSAS:93 and B&B:93/97 only	Yes	No	Yes	468	4.2
B&B:93/94 and B&B:93/97 only	No	Yes	Yes	318	2.8
NPSAS:93 only	Yes	No	No	565	5.0
B&B:93/94 only	No	Yes	No	29	0.3
B&B:93/97 only	No	No	Yes	33	0.3
B&B:93/97 deceased* (B&B:93/94 respondents)	Yes	Yes	--	23	0.2
B&B:93/97 deceased* (B&B:93/94 nonrespondents)	Yes	No	--	7	0.1
Nonrespondents to all three rounds	No	No	No	39	0.3

*B&B:93/97 discovered 29 deceased eligibles, and one ineligible previously undiscovered.

NOTE: Due to rounding, details may not add up to 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149); *Baccalaureate and Beyond:93/97*.

Table 2-3 below shows the response patterns by institution type for all 11,192 B&B eligibles. This table is similar to table 2.2 from the first follow-up methodology report, which showed the NPSAS:93

response rates by institution type. However, this table has two differences. First, due to the very small number of private, for-profit school students, these students are not shown separately from the private, non-profit school students. Second, the private schools with first-professional students are separated from those private schools with only doctoral students and below.

Table 2.3.--B&B cohort response patterns, by institution type

Type of student	B&B eligibles	NPSAS93 completes	B&B:93/94 completes	B&B:93/94 transcript completes	B&B:93/97 completes	Panel* completes
All students	11,192	10,773	10,080	10,976	10,093	9,274
Institutional level:						
Bachelors	1,271	1,224	1,148	1,055	1,150	1,055
Masters	3,853	3,724	3,458	3,853	3,455	3,188
Doctors	1,703	1,639	1,548	1,703	1,536	1,415
First-professional	4,365	4,186	3,926	4,365	3,952	3,616
Institutional control:						
Public	7,274	7,012	6,572	7,274	6,588	6,071
Private	3,918	3,761	3,508	3,702	3,505	3,203
Institutional sector:						
Public, bachelors	275	265	254	254	255	235
Public, masters	2,414	2,340	2,166	2,414	2,165	2,000
Public, doctors	1,393	1,345	1,262	1,393	1,258	1,160
Public, first-professional	3,192	3,062	2,890	3,192	2,910	2,676
Private, bachelors	996	959	894	780	895	820
Private, masters	1,439	1,384	1,292	1,439	1,290	1,188
Private, doctors	310	294	286	310	278	255
Private, first-professional	1,173	1,124	1,036	1,173	1,042	940

*Panel completes are those responding to all three CATI interviews to date.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149); *Baccalaureate and Beyond:93/97*.

3. Data Collection: Preparation

3.1 Instrument Development

Technical Review Panel. The Technical Review Panel Meeting (TRP) for the Baccalaureate and Beyond Longitudinal Study: Second Follow-up (B&B:93/97) was held on November 6 and 7, 1996 in Washington, D.C. Twenty-three people participated in the meeting, including NCES, NORC, and MPR staff members. A list of panel members is included in appendix A.

Panel members focused on considerably shortening and revising the instrument based upon the results of the B&B:93/97 Field Test. Items were dropped mainly for lack of reliability or usefulness. Topics for descriptive reports were identified and then used as a guide to determine which questionnaire items could be dropped and which should be retained, revised or clarified.

Most of the items excluded from the second follow-up main study instrument were from the demographic section. These included questions about high school grades, income of other household members, other sources of household income, respondent's access to computers and their driver's license number. A few items were also eliminated from other sections, such as questions about tuition and fees for schools attended after baccalaureate degree receipt from the sample school.

The most extensively revised portion of the instrument was the teaching section. A new definition of what constitutes the 'teacher pipeline' was used to redesign the initial filter questions for this section. Additionally, the teaching section was moved to precede the employment section so that data about teaching jobs were collected before data about other (non-teaching) jobs. The intended effect was to reduce respondent burden from the earlier round, when data were first collected about all jobs, and then again about teaching jobs. Other revisions to this section included focusing on the most recent spring term (as opposed to academic year) in which the respondent taught, and adding specific items about itinerant and "support" teaching positions.¹

Some items in other sections were also targeted for revision or clarification. Instead of asking for the respondent's first and second choice graduate schools, the second follow-up instrument gathered more general data about graduate applications and types of programs to which the respondent applied. Based on the assumption that a larger proportion of sample members would be attending post-baccalaureate school, items were added to gather data on the respondent's status in graduate or professional programs.

Suggestions arising from the TRP meeting were utilized in making revisions to the instrument. During this period, several meetings were also held with staff from NCES, MPR, and NORC to review and test the instrument. The final instrument was completed on March 14, 1997, with minor modifications made after supervisor training on March 27. Improved coding programs for industry, occupation, and major field of study were provided by NCES and integrated into the instrument in early April. A copy of the final instrument used in B&B:93/97 is contained in appendix H.

¹ For purposes of the B&B:93/97 study, a "support" teacher was defined as one who works with other teachers to develop curricula or teaching materials, but does not necessarily teach students.

NORC also revised the question-by-question specifications to assist interviewers in administering the survey. These question-by-question specifications were incorporated into the electronic instrument upon approval by NCES.

On-line coding systems. The B&B:93/97 instrument was designed to use five on-line coding systems developed by NCES. These coding systems enabled interviewers to code responses during the interview; they also guided interviewers' probes of any unclear or incomplete answers. These systems were used to code 1) occupation, 2) industry, 3) major fields of study, 4) postsecondary schools attended, and for teachers, 5) the elementary and secondary schools where they taught.

The specialized coding systems for industry, occupation, and major operated in a similar manner. The interviewer would enter a short verbatim text reflecting the respondent's answer to the question. The system would then offer the interviewer a choice of code categories which it had selected by matching the verbatim text with text in the database. The interviewer could select one of the suggested categories, or choose to manually scroll through the response categories to select an appropriate code. Both the verbatim response and the interviewer's coded selection were saved so that the system could be improved for later rounds. (Section 6.2 provides a discussion of interviewer coding accuracy.)

The on-line coding systems for elementary and secondary schools, and postsecondary institutions, worked somewhat differently. Rather than entering verbatim responses, interviewers would instead select the appropriate state and then the city in which the school was located from lists appearing on the screen. The system then displayed all of the schools located in that city. To code the response, the interviewer used the cursor to highlight the school the respondent named. A confirmation screen appeared to verify that the correct school was chosen.

3.2 CATI Interviewer Training

One hundred and two interviewers were selected for B&B:93/97 CATI interviewing (field interviewer training is discussed in section 4.5). All interviewers had received eight hours of general training prior to working on their first NORC project. The general training consisted of standard NORC interviewing practices and general telephone center policies.

Ninety-seven interviewers attended the three day training conducted between April 3 and April 6, 1997. Similar to the B&B:93/94 interviewer training, this training contained modules consisting of lecture, demonstration, and hands-on experience in using CATI, on-line coding, and the TNMS (telephone number management system). The modules included the following:

- X Overview of B&B:93/97 Project
- X Confidentiality Procedures
- X Conversational Interviewing Techniques
- X Gaining Cooperation
- X Statistical Quality Control
- X TNMS
- X On-line coding of industry and occupation, postsecondary institutions (IPEDS), major field of study, and elementary/secondary schools (ELSEC)

Interviewers also participated in two group-led CATI mock interviews and two duo-mock interviews. This provided interviewers with hands-on practice with the questionnaire and CATI prior to actual interviewing. Interviewers also received homework assignments dealing with the materials covered each day.

After project training, all interviewers went through a project certification process. Each interviewer completed a check-out mock interview with a supervisor who evaluated the interviewer's knowledge and skills in CATI, gaining cooperation, TNMS, the five on-line coding programs, conversational interviewing, and how to probe unclear responses. Some interviewers required additional practice in specific skills before passing certification.

3.3 Prefield Locating Procedures

The B&B:93/97 field test experience was that more than half, rather than the expected third, of sample members had required locating. Therefore, the following locating procedures were instituted prior to data collection in an attempt to alleviate this problem for the main survey.

Credit Bureau Address Updates. The multiple changes in employment, marital status and place of residence that characterize much of the B&B sample can result in the need for address updates from one or more of the three national credit bureaus (Experian, Trans Union, Equifax). Activities such as the following can generate address updates: extension of credit; application for employment; application for apartment rental or lease; start-up or change of a utility provider (e.g. water, gas, electric, cable); application for insurance; a bank or loan company attempting to collect a debt. Therefore, credit bureau databases can be a very helpful locating resource as they provide the address, and sometimes the phone number, at which someone was living when any of these activities occurred.

In early March, immediately prior to the start of CATI data collection, all respondent social security numbers, names, phone numbers and addresses were sent to Experian, one of the three large credit bureau database services, to obtain updated addresses and phone numbers. Experian was able to provide us with address changes or verifications for 6,101 sample members (54.5 percent of the initial sample). The updated addresses were loaded into the case management system (CMS) as the best address and used to generate the advance letter mail-out.

The names and addresses of the 23,469 parents and contacts identified by B&B respondents when last interviewed were also updated through Experian. NORC obtained address changes or verifications for 47.6 percent (11,463) of these contacts. The updated addresses were again loaded into the CMS as an updated resource for any of these cases that would require locating.

U.S. Post Office Address Corrections. A week before interviewing began, NORC sent an advance mailing packet to the respondents' updated addresses. The envelopes were stamped with "Forwarding and Address Corrections Requested." This stamp ensured that mailings would not only be forwarded to respondents who had moved but that NORC would also receive the corrected addresses from the U.S. Post Office. The Post Office returned 980 corrected addresses (8.8 percent of the initial sample).

Respondent-Generated Updates. The advance packets included a letter which asked respondents to notify NORC of any changes in their phone numbers or addresses since they were last

interviewed. A toll-free phone number for NORC's telephone center, as well as a direct phone number to the NORC project director, was provided. NORC also provided a B&B-specific E-mail address in the letter, as an additional venue for respondents to use to update their phone numbers and addresses. (The phone numbers and E-mail address were also included in an enclosed leaflet that described the project in more detail.) NORC received E-mails from approximately one percent (75), and phone calls from about 5.5 percent (619), of the sample members. When NORC received an E-mail or letter from a B&B sample member indicating that his/her phone number had changed, the new phone number was entered directly into the TNMS by a supervisor.

4. Data Collection: Process

Overview. An advance mailing containing a letter and informational leaflet was sent to all 11,192 B&B:93/97 sample members in the spring of 1997 inviting them to participate in the study. The letter, appendix B, provided a summary of the survey objectives, an introduction to NCES and NORC, and a promise of strict adherence to the privacy protection laws. The leaflet, appendix C, highlighted key findings from the first follow-up. Sample members were also given a toll-free 800 number and an E-mail address through which they could obtain further information, schedule an interview, or provide an updated phone number.

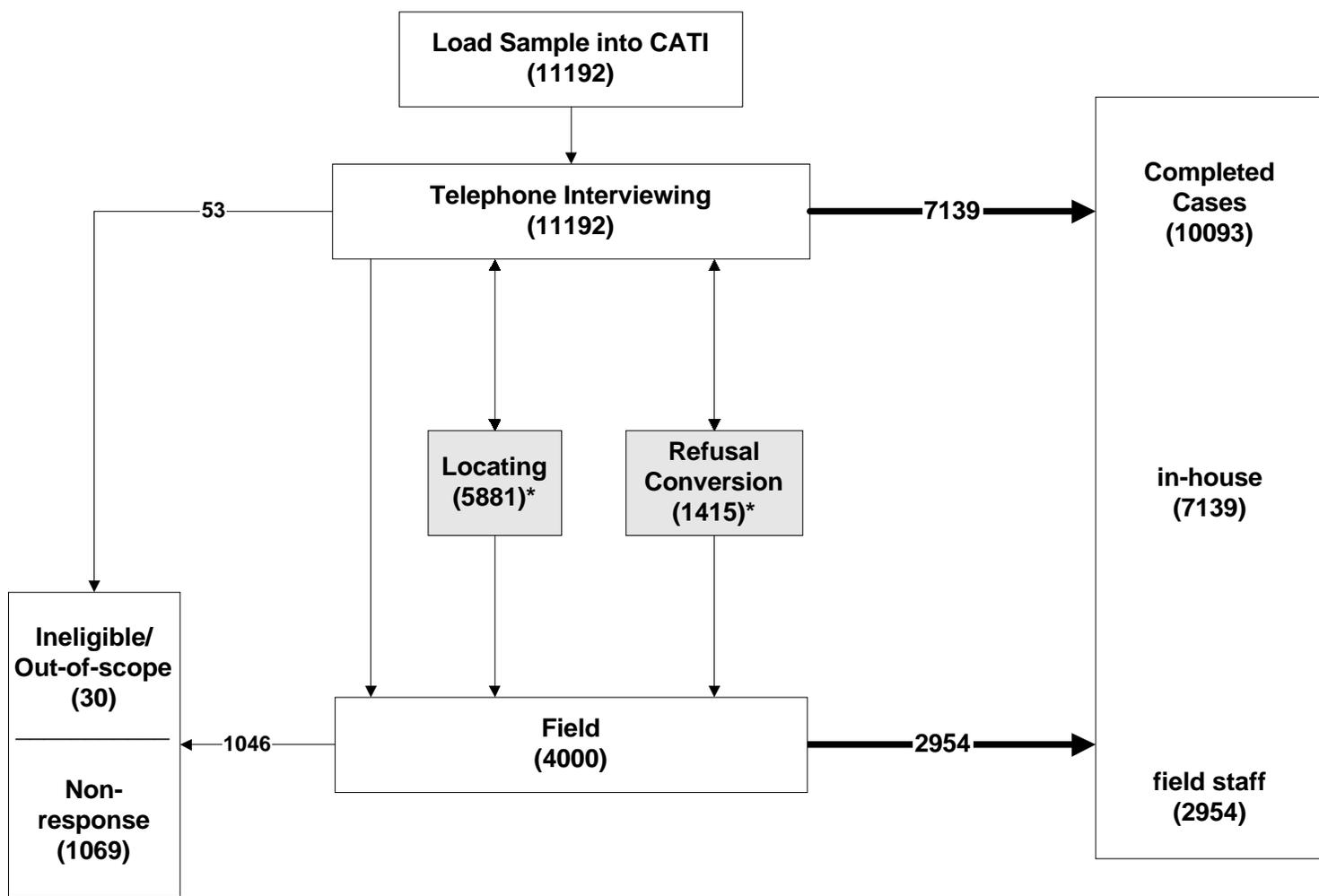
Interviewing began on April 8, 1997, approximately one week after the advance letter mailing. Telephone interviewing continued until July 25, 1997, a period of 16 weeks. Cases that were pending at the end of this time were sent to field interviewers and worked from July through December 31, 1997, a field period of 23 weeks.²

Figure 4.1 summarizes the flow of cases through the major activities--interviewing, locating, refusal conversion--in the B&B:93/97 survey. As shown, case records for the sample were loaded into the CATI telephone number management system (TNMS) and delivered to interviewers. Cases were delivered initially during peak contacting periods which included Monday through Thursday evenings, Saturday mornings, and late afternoon and evening hours on Sunday. A total of 7,139 cases (64 percent of the 11,162 eligible cases) were completed in the telephone center. An analysis of the case delivery management is presented in section 4.1; CATI production is described in section 4.2.

Locating problems were associated with a majority of the cases. Prior to being loaded into the TNMS, all cases had been sent to a credit bureau database service to obtain updated phone and address information about each sample member. Cases for whom no number was available, either through this process or from an earlier interview, and cases whose updated phone number was subsequently identified as being incorrect, were sent to locating specialists. As Figure 4.1 indicates, 5,881 cases, (53 percent of the initial sample) required this intensive locating while in NORC's centralized telephone facility. About half of these cases were eventually completed in the telephone center; the other half were sent to the field, where 429 additional locating problem cases were identified. Only 2.7 percent of these cases (1.5% of all cases) remained unlocatable; interviews were eventually completed with 86 percent of these sample members. The locating process and results are discussed in more detail in section 4.3.

² In actuality, field work began on a small number of cases in mid-June, when the telephone center began transferring hard refusal and unlocatable cases to the field, once all telephone efforts had been exhausted.

Figure 4.1.--Paths toward case completion



*Cases could be designated as locating or refusal problems, or both.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97.

Sample members refusing to participate in the B&B:93/97 study presented less of a problem than had been experienced in the first follow-up but conversion remained difficult. Fifteen percent (1,679) of eligible sample members refused to participate at some time during this survey, compared to 20 percent in B&B:93/94. The majority of these cases (1,415) were first identified as refusals in the telephone center.

CATI refusal conversion specialists were able to complete interviews with about one quarter of these sample members; three quarters of these cases (1,050) had to be sent to the field where interviewers could contact sample members in-person if necessary. Field interviewers were able to convert an additional 782 reluctant sample members, producing a final response rate of 67 percent among those who had ever refused to participate. More information about the refusal conversion effort is presented in section 4.4.

After telephone interviewing was halted in early July, field interviewers were sent 4,000 cases, a little more than one third (36 percent) of the initial sample. The vast majority of these cases required locating or refusal conversion. Overall, the field staff completed 2,954 cases increasing the final response rate for B&B:93/97 to 90 percent. Field activities are described in section 4.5.

4.1 Telephone Interviewing Case Management

The CATI telephone number management system (TNMS) is NORC's standard call scheduling and telephone number delivery system. The system is responsible for routing cases to interviewers at the most opportune times for telephone contact. Interviewers record the call-outcomes for each attempted contact with each case in the TNMS. The system then chooses the next appropriate action for that case, determined by a combination of the last outcome with its history of outcomes.

The TNMS tracks and categorizes the status of cases by using a location flag attached to each case. For B&B:93/97, the TNMS used seven different locations:

1. General Interviewing
2. Refusal Conversion
3. Locating
4. Max Calls
5. Field
6. B&B:93/94 Refusals
7. Holding Tank

Cases which were in the general interviewing location were automatically delivered to interviewers at appropriate times by the case delivery module of the system. Cases in all other locations (such as refusals or locating problems) were managed and accessed directly by the appropriate staff group. The system automatically updated the location flag of each case depending on the outcome codes provided by the interviewer. For example, respondents who refused to complete the interview were coded as refusals by the interviewer and automatically routed by the system to location two, refusal conversion. After a short cooling down period, the case was worked by a refusal convertor. If the respondent could not be converted, the case was filed to location five, field, and sent to a field interviewer. Similarly, when a case was identified as temporarily unlocatable, the system automatically routed it to location three, locating. Each night the system automatically scanned new cases put into location three and loaded them into the Case Management System (CMS) locating database, which then made these cases accessible to locating specialists.

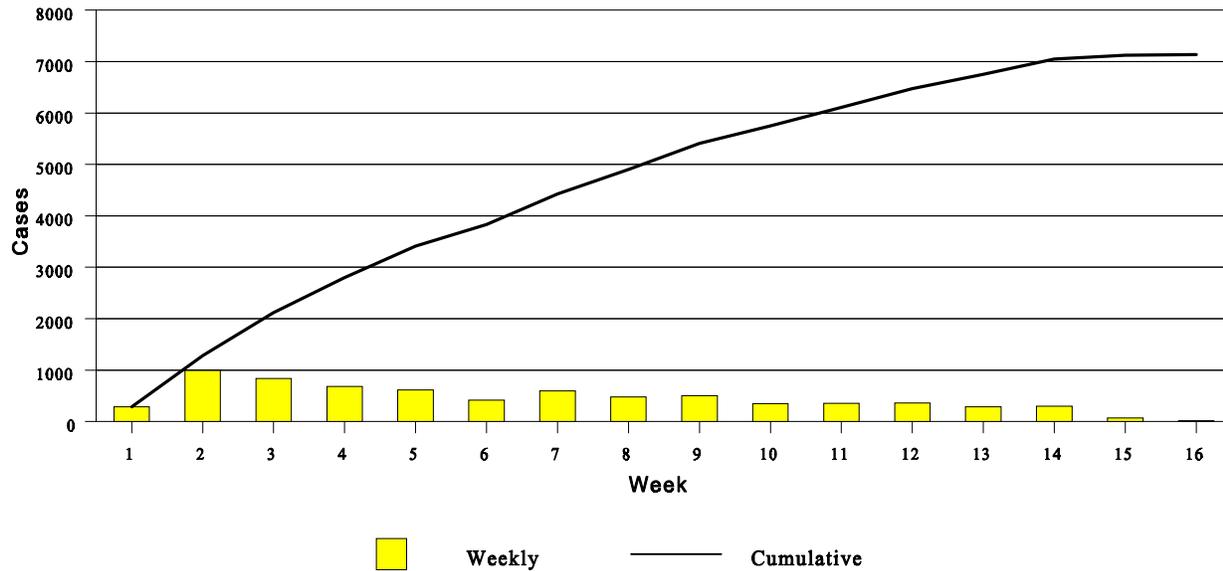
Calling algorithms. The calling times and case routing schedule set up for the B&B:93/97 sample was based on our field test experiences which suggested that the best times to reach sample members would be Sunday through Thursday evenings and Saturday mornings. Initial calls were not scheduled for Fridays, late Saturday afternoons and evenings, or early during the day on Sundays. However, interviewers worked these hours to service any appointments set up by respondents during these times. The telephone center was in operation from 8:00 a.m. - 11:00 p.m. on Monday through Thursday, 8:00 a.m. - 9:00 p.m. on Friday, 8:00 a.m. - 7:00 p.m. on Saturday and 11:00 a.m. -11:00 p.m. on Sunday.

Cases were delivered to interviewers by the TNMS initially up to 13 times before being filed to Location 4, max calls, which indicates difficult-to-reach respondents whose phone numbers have been called several times with no contact made. The weekly calling algorithm reflected the above preference for Monday through Thursday evenings, Saturday mornings, and Sunday evenings. Cases were delivered twice during each evening Monday through Thursday (8), once on a weekday morning (1), once on a weekday afternoon (1), once on Saturday morning (1), and once on Sunday evening (1). If no contact had been made with the respondent after the twelfth call had been made (indicating that the entire algorithm cycle had been covered), the case was reviewed by a supervisor. The supervisor would decide either to send the case back to the floor to be called during an off-cycle period, or to send the case to a locating specialist. The calling delivery cycle was stopped as soon as an appointment was set to call the respondent. From that point forward, appointments determined when the respondent was called.

4.2 CATI Production

Data collection began on April 8, 1997. Week-by-week production and cumulative completes are diagramed in figure 4.2. Week two was not only the first full week of production but also the highest week of production, with almost 1,000 interviews completed during that week. While production remained high through week five, averaging more than 700 completed cases per week, by week six the rapidly increasing number of cases requiring the attention of locating specialists was adversely affecting the rate of interviewing production (down to 418). This was due to the need to shift telephone center resources from interviewing to locating activities, and also reflected the additional calls necessary to complete a case since a greater percentage of the remaining numbers were discovered to be either incorrect numbers, refusals, or very busy sample members who were rarely home. By week seven, however, the release of newly located sample members increased production; which remained fairly steady, averaging 525 completed cases per week for the next three weeks, decreasing to an average of 329 completed cases for weeks ten through fourteen before dropping considerably the last two weeks, during which time cases were being transferred to the field (primarily hard refusal cases and locating problem cases which required locally-based or in-person locating efforts or conversion activities).

Figure 4.2.--CATI production rates, by week

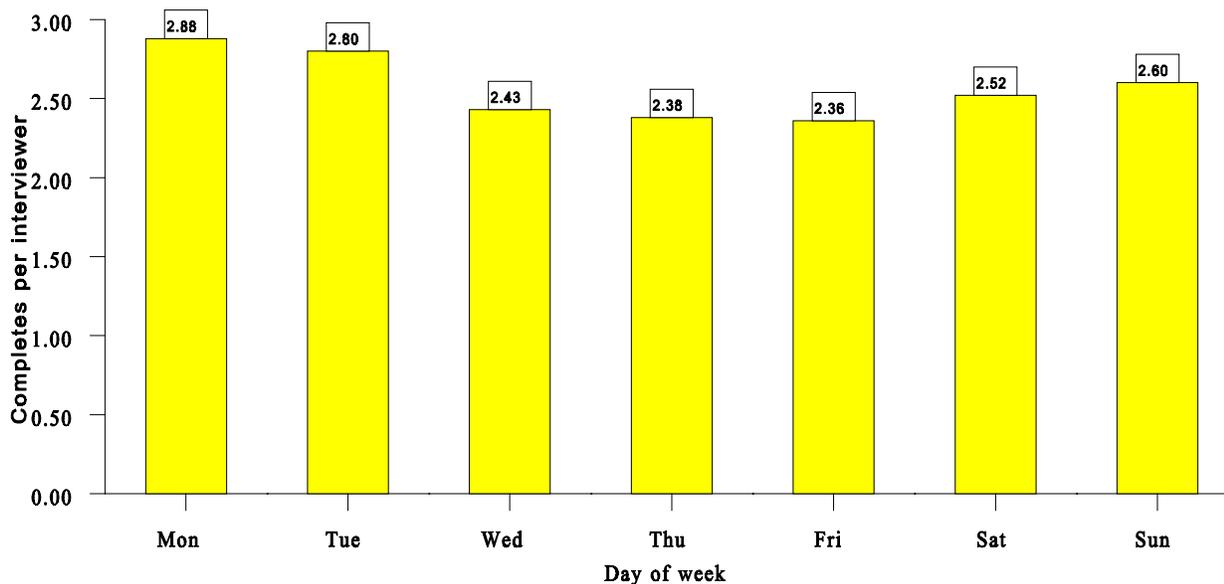


SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97

The number of calls per completed case is the best indicator of the level of effort required in the interviewing task. The TNMS tracks every call; writing to a log file the outcome of the call and the date and time of the attempt. The data in the log file can then be used to calculate the level of effort (number of calls) necessary to complete a telephone interview. The average number of calls made in the TNMS to complete a case averaged 18.5 for the B&B:93/97 sample compared to an average of 13.4 calls for the cases completed in the telephone center for the B&B:93/94 sample. These data indicate that a much higher level of effort was required to complete cases in 1997. This was largely due to the much higher number of locating problems encountered (interviewers were much less likely to locate sample members at their preloaded phone numbers or still residing with their parents as had been the case in 1994) and also reflects the busier lifestyles of the majority of sample members who may have more career and family responsibilities than they had three years ago.

Figure 4.3 presents data on case completion per interviewer by day of the week. Weekends, and especially evenings in the early part of the week (Mondays and Tuesdays) were found to be particularly effective days to call respondents.

Figure 4.3.--CATI production rates per interviewer, by day of week



SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97.

4.3 Respondent Locating

Cases requiring locating were an extensive problem for B&B:93/97. It had been expected that approximately one third of the sample members would require locating; in reality, more than one half of the initial sample (6,300 cases) eventually required some kind of locating effort during the production period.

This locating was in addition to the prefield locating activities explained in detail in section 3.3. However, telephone center and field locators were very successful and ultimately located all but 1.5 percent of the net sample.

Protocol used for locating. Cases were loaded into the TNMS with the “best” telephone number for reaching the respondent based on the information obtained through the prefield locating efforts. (In chronological order of receipt, this could be the phone number provided by 1) the respondent when last interviewed for B&B:93/94 in 1994 or NPSAS in 1993; 2) the NCOA/Telematch update service NORC had used for all main survey respondent data in February, 1996, prior to the start of the field test; 3) the credit bureau database update service NORC used to update all main survey respondents and contacts in March, 1997 immediately prior to starting production). The “best” phone number was assumed to be the number most recently obtained.

About half of the B&B:93/97 interviewers (48) were cross trained as locators, each attending one of several two-day training sessions held. Training focused on 1) locating protocols including ordered usage of the primary locating resources available for most sample members; 2) use of NORC’s CMS Locating System to access and record case-specific locating information and track all locating efforts; 3) gaining cooperation of informants; 4) mock locating phone calls and exercises; and 5) a check-out exercise necessary to be certified as a locating specialist.

Locators used the CMS Locating System to both guide and track their efforts. The CMS contained the following preloaded locating data for each case: all available respondent and parent/contact phone

numbers and addresses; respondent social security and driver's license numbers; undergraduate school (and graduate school, if applicable) attended by the sample member. The system also contained all locator-entered records that indicated which resources had already been used and the results of that usage, including any updated phone and address information obtained for respondents or their parents or contacts. Locating specialists were instructed to use the following resources in the order they appear since the order correlated to their past proven utility in locating field test sample members: 1) all respondent-generated information (E-mails, address corrections from the U.S. post office, any previously-acquired respondent phone numbers); 2) last known telephone number of the parent(s); 2) last known telephone number of other contacts; 3) graduate schools (if applicable); 4) undergraduate institutions/alumna associations; 5) the other two credit bureau updating services; 6) military locating service if applicable; and 6) the Department of Motor Vehicles in the state which issued the respondent's last known driver's license.

Some cases remained unlocatable at the close of telephone operations. A record of all locating activities engaged in by the telephone center locating specialists as well as any updated address information acquired for each of their assigned cases was accessible to the field interviewers through the CMS loaded into their computers. Upon review of the CMS call records for their cases, field interviewers could use the resources listed above that had not yet been accessed or could use additional resources because of their regional knowledge not available to the telephone center locators (such as voter registration offices, utility companies, tax assessors offices, churches).

Final completion status by locating problem status. Following the protocols discussed above, CATI interviewers were able to find and complete interviews with about half (2,885) of the 5,881 cases identified as locating problems in the telephone center. Ten cases were identified as deceased, fifteen finalized as hostile refusals, and the remainder (2,971) were sent to the field. An additional 429 cases were subsequently identified with locating problems by field staff. Field interviewers eventually located 95 percent of these sample members (3,232 of the 3,400 field locating problem cases) and completed interviews with 75 percent (2,531) of them.

Table 4.1 compares the final completion status of cases ever identified as a locating problem versus those for whom locating was unnecessary. Of the 6,300 cases ever identified with locating problems, 86 percent (5,416) were successfully traced and interviewed compared to a 96 percent response rate for those sample members never identified as locating problems. Thus, while locating cases were more difficult to complete than those which did not require this extensive effort, NORC was quite successful in locating and completing interviews with these respondents. The refusal rate for locating problem cases was twice as high as it was for cases never identified as a locating problem suggesting that some locating problems were actually hidden refusals.

Table 4.1.--Final completion status, by whether or not locating needed

	Complete	Final refusal	Unlocated	Other non-response	Subtotal
Total	90.4% 10,093	2.6% 287	1.5% 168	5.5% 614	100% 11,162
Locating needed:	86.0% 5,416	3.7% 230	2.7% 168	7.7% 486	100% 6,300
Phone	45.8% 2,885	0.2% 15	0.0% 0	0.0% 0	46.0% 2,900
Field	40.2% 2,531	3.4% 215	2.7% 168	7.7% 486	54.0% 3,400
Locating not needed:	96.2% 4,677	1.2% 57	0.0% 0	2.6% 128	100% 4,862
Phone	87.4% 4,254	0.3% 15	0.0% 0	0.0% 0	87.8% 4,269
Field	8.7% 423	0.9% 42	0.0% 0	2.6% 128	12.2% 593

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond:93/97*.

4.4 Refusal Conversion

A total of 1,679 respondents (15 percent of the total eligible sample) refused to complete the interview at some point in the interviewing process. The majority of these cases (1,415 or 84 percent of all refusal cases) were first identified as such in the telephone center. Sample members who initially refused were given a two week 'cooling off' period. These cases were then made available to one of several B&B:93/97 trained interviewers who were experienced at refusal conversion. Each of them had also attended a briefing that included a review of project-specific types of refusals and a round robin practice of exercises in gaining their cooperation.

The CATI refusal converters were able to convert and complete 335 of the refusal cases (24 percent of the cases identified as refusals in the telephone center). Thirty cases were finalized as hostile refusals and the remainder (1,050) sent to the field. An additional 264 cases were subsequently identified as refusals by field staff. Field interviewers were eventually able to complete interviews with 60 percent of these sample members (782 of the 1,314 refusal cases sent to, or identified in, the field), obtaining an overall response rate of 67 percent for all cases who had ever refused. Appendix D contains a

sample of the conversion letters and data usage document that were used by NORC staff to persuade reluctant sample member to participate in B&B:93/97.

Table 4.2 compares the final completion status of those cases who had never refused to those who had initially refused. It is evident that converting those who refused was a difficult task. While NORC interviewers obtained a response rate of 95 percent among those who never refused, they were able to complete interviews with only 67 percent of those who had refused at some point in the production period. While an initial refusal rate of 15 percent for the second follow-up compares favorably to the 20 percent initial refusal rate experienced in B&B: 93/94, the response rate for refusal cases was lower in 1997 than it was for the first-follow-up (67 percent versus 74 percent). This might seem to suggest that the hard-to-persuade are becoming more intransigent; however, only 39 B&B:93/97 sample members have been non-respondents to all three waves of data collection (NPSAS, B&B:93/94, B&B:93/97). In fact, NORC successfully interviewed 501 cases that had been nonrespondents in the first follow-up, and 351 sample members who had been nonrespondents for NPSAS. (See section 2.3 for a detailed discussion about, and table displaying, the combined response rates to the three waves of B&B data collection).

Table 4.2.--Final completion status, by initial refusal status

	Complete	Final refusal	Unlocated	Other non-response	Subtotal
Total	90.4% 10,093	2.6% 287	1.5% 168	5.5% 614	100% 11,162
Ever refused:	66.5% 1,117	17.1% 287	2.1% 35	14.3% 240	100% 1,679
Phone	20.0% 335	1.8% 30	0.0% 0	0.0% 0	21.7% 365
Field	46.6% 782	15.3% 257	2.1% 35	14.3% 240	78.3% 1,314
Never refused:	94.7% 8,976	0.0% 0	1.4% 133	3.9% 374	100% 9,483
Phone	71.7% 6,804	0.0% 0	0.0% 0	0.0% 0	71.7% 6,804
Field	22.9% 2,172	0.0% 0	1.4% 133	3.9% 374	28.3% 2,679

NOTE: Due to rounding, details may not equal 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97.

4.5 Field Operations

In mid-July, the telephone center ceased work on B&B:93/97 and all pending cases were transferred to NORC's field staff. All were cases the telephone center had been unable to complete because the respondent refused, was evasive, or had not yet been located. (Field staff actually began working a small number of cases in June, as the telephone center began filtering hard refusal and locating problem cases to the field). Field staff received and worked their cases using a laptop computer on which the CAI (computer-assisted interviewing) instrument had been loaded as well as the electronic case management system (CMS). The CMS contained all the locating information and call records associated with each case that a field interviewer was assigned as well as information about the current status of each case. Field managers were able to access and review all of the cases assigned to all of the interviewers they were supervising.

Field staff. A field project manager, assisted by a district field manager, provided overall task management for this component. Twelve field managers (FMs) were hired to initially supervise fifty-eight *telephone field interviewers*. Each manager was responsible for a specific geographic region of the United States. *In-person field interviewers* were later recruited and hired as needed contingent upon the location of cases, and need for locally-based locating work or in-person contact. A total of 112 in-person field interviewers were hired on this as-needed basis for B&B:93/97.

Training. In mid-June the twelve field managers attended a four-day training and then began working hard refusal and locating problem cases in preparation for their involvement in the training and management of the field interviewers. In mid-July, the central office and field management staff conducted a four-day training for the fifty-eight initial field interviewers. These four-day training sessions consisted of relevant modules from the CATI and locator trainings, with additional emphasis on case analysis, field-specific locating resources and procedures, refusal conversion, CMS usage, and field-specific administrative procedures. The field managers then conducted a final mock interview and telephone review with each of the field interviewers assigned to them to ascertain their readiness to begin working their cases.

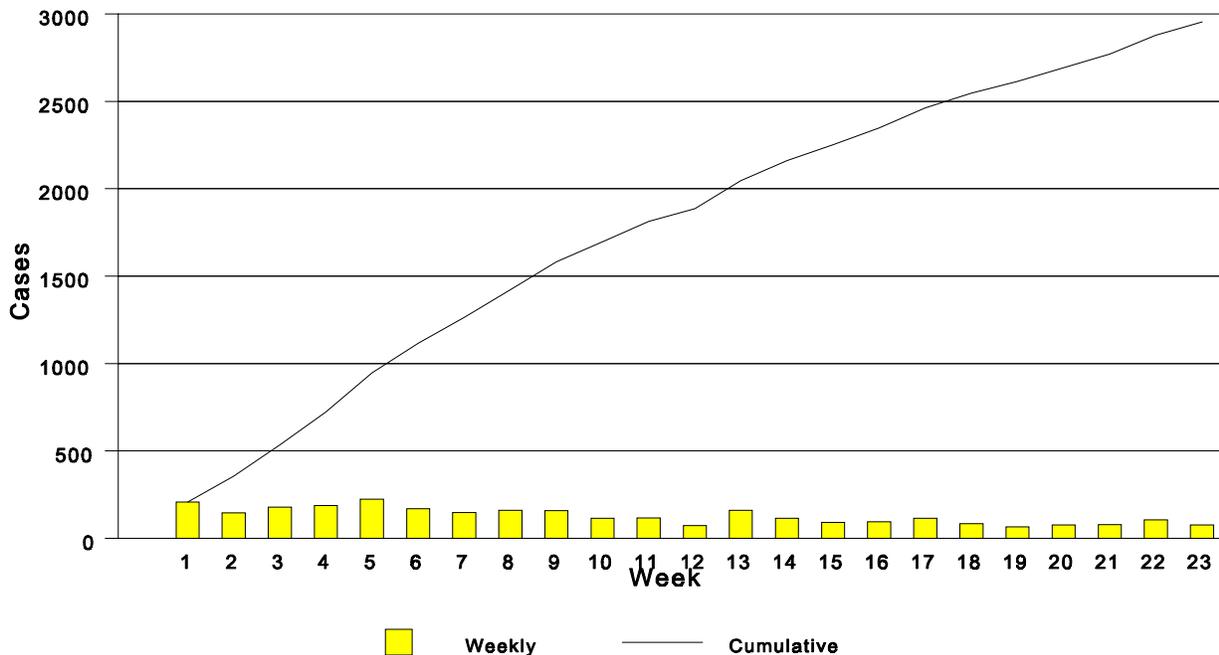
Field production. A total of 4,000 cases (36 percent of the total sample) were sent to the field. The cases were grouped by most-current respondent zip code and then distributed to the geographically-appropriate field manager. Materials made available for each case included a face sheet with respondent demographic and most-recent locating information, a call history report with notes made by telephone center interviewers and locators describing each contact made with the respondent or locating resource, and a listing of all of the locating resources used and/or available for the case. The cases were then reviewed by the FMs before being assigned to a field interviewer. The cases sent to the field were the most difficult: approximately one-third were refusals, and two-thirds were respondents who were difficult to locate or evasive (cases where the respondent was never available or where gatekeepers kept the telephone interviewer from reaching the respondent).

Figure 4.4 shows the weekly and cumulative production rates for the field data collection. The initial completed cases identified for the first week of field production are actually an accumulation of cases completed by the field managers in the month preceding the field interviewer training in Mid-July. The second week is really the first full week of field production. The graph indicates that production rates increased steadily during the first four weeks of full field production as interviewers familiarized themselves with their cases and became increasingly successful at locating, or converting, these problem

cases. Production reached a high of 225 completes per week for week five. The completion rate decreased in the following weeks, averaging 159 interviews per week for weeks six through ten, then decreasing to a low of 73 completed cases for week twelve (early October).

Locating problems were the most significant deterrent to field production. Therefore, in early October, project management decided to reconfigure the field structure into task-specific groups to more efficiently handle the problems encountered. Three groups were formed, each headed by a separate Field Project Manager (FPM) who was responsible for staffing, training, and supervising that particular group: 1) a locating group, comprised of field managers and interviewers specializing in locating procedures; 2) an in-person field interviewer group for those geographically-scattered cases that required on-site visits; and 3) a reduced telephone field interviewer group, each receiving a larger case workload to increase efficiency. The FPM for this latter group was also responsible for overall production monitoring and interfacing with the other two groups. The remaining weeks of production (thirteen through twenty-three) reflect the success of this restructuring with an average of about 100 interviews per week thereafter. The field staff were able to complete 2,954 (74 percent) of their total case workload, bringing the final B&B:93/97 response rate to 90 percent.

Figure 4.4. --CAPI production rates, by week



SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97.

4.6 Quality Assurance

To ensure data quality, NORC used the following procedures and reports throughout the data collection phase:

- X CATI interviewers were monitored on a random basis. During each monitoring session, the supervisor noted any deviations or errors in interviewing, locating, or gaining cooperation. Reports were generated showing overall error rates as well as errors by question number. Interviewer feedback sessions were conducted on a weekly basis. During these meetings, interviewers received feedback about the group's performance, and were given the opportunity to ask questions or comment on the instrument.
- X Coding accuracy was verified by having a sample of entries from each of the coding programs recoded by expert coders. A program then compared the expert coders recoded entries with the interviewers original entries and generated a report on error rates for coding. (See section 6.2.)
- X Production statistics, for both the phone center (CATI) and field data collection phases, were produced and reviewed on a daily basis. Efficiency ratios such as calls made per completed case, or interviewer hours spent per completed case, were analyzed to track, and correct for, trends that affected the efficiency of the data collection effort.
- X Frequencies and time stamps were reviewed daily during the first week of production, and on a periodic basis thereafter. Frequencies and time stamps were exported daily and placed in the password protected B&B:93/97 Web-site so that they would be available for immediate review had any concerns arisen.
- X A validation process was used to monitor the quality of interviews completed by field interviewers. Cases were randomly selected for each interviewer. Respondents were recontacted and briefly questioned to ensure that the interviewer actually completed the interview and that the interviewer administered the questionnaire appropriately and professionally.

Production reports. Daily automated production reports, which contained statistics on the number of cases completed and/or located and the inputs required to attain completion (e.g., effort, labor, and time) were used to measure and monitor both telephone center and field productivity. These data allowed the B&B:93/97 staff to pinpoint productivity problems with both the interviewing and locating efforts, and to correct for any problems demanding attention. These production reports were generated nightly and automatically updated on the project Web-site, which enabled timely client access to all data.

CATI interviewer monitoring. CATI interviewers were carefully monitored by supervisors to ensure consistent high-quality data throughout the field period. NORC's online monitoring system allowed monitors to simultaneously listen to an interviewer, observe the interviewer's computer screen, and record any errors or comments into the monitoring system database. Supervisors conducted all monitoring activity from the monitoring room just off the interviewing area in order not to disturb the actual interviewer.

All in-use work stations were randomly selected at 15 minute intervals for monitoring by a supervisor according to pre-scheduled monitoring sessions. Using an on-line data capture program equipped with audio and visual capabilities, supervisors responded directly to ongoing interviews by entering

evaluation data directly onto data capture screens. The monitor assigned performance ratings to various skills on a 0-5 scale where "0" indicates the skill was not observed, and ratings of 1-5 correspond to increasingly higher level of skill mastery and acceptability. The data capture screen also allowed supervisors to log question numbers associated with errors and general comments pertaining to these errors. Another data capture screen collected very general information and commentary on non-interviewing activities such as refusal conversion.

Consistent with the daily production reports generated for system monitoring, statistics were reported daily for interviewers' sessions. Daily statistics are presented in table 4.3. Control charts were utilized to track the average number of errors associated with each minute of observed interviewing. Error rates for project staff stayed within the predetermined limits set for the phone center. In addition, Pareto analysis was utilized to identify the most frequently observed errors encountered in a monitoring session. Taken together, these quality control measures ensured the integrity of the data gathered during data collection.

Table 4.3--Total monitored interviewing time and error rates

Date	Total monitoring time	Total errors	Total monitored interviewing time	Interviewer error rate
5/15/97	04:02:56	1	00:14:46	0.07
5/17/97	01:38:23	5	00:40:51	0.12
5/18/97	02:37:46	1	00:27:56	0.04
5/19/97	08:02:37	14	02:44:20	40.09
5/20/97	04:22:46	4	01:02:13	0.06
5/21/97	05:56:44	11	01:56:36	10.09
5/22/97	03:17:19	4	01:00:16	0.07
5/23/97	02:52:16	5	01:08:45	0.07
5/24/97	00:47:30	0	00:09:46	0.00
5/25/97	01:51:33	4	00:44:26	0.09
5/27/97	06:10:14	1	00:42:10	0.02
5/28/97	06:13:33	2	01:25:12	0.02
5/29/97	03:39:16	1	00:42:08	0.02
5/31/97	01:35:24	3	00:33:34	0.09
6/01/97	06:57:45	2	01:17:45	0.03
6/02/97	05:48:11	7	02:16:28	0.05
6/03/97	05:28:27	0	00:15:05	0.00
6/04/97	05:04:28	5	01:01:20	0.08
6/05/97	07:58:11	4	01:18:36	0.05
6/07/97	07:20:03	1	01:00:39	0.02
6/08/97	03:59:29	2	00:56:35	0.04
6/09/97	02:34:44	4	01:21:34	0.05
6/10/97	05:50:40	6	01:27:00	0.07
6/11/97	06:45:03	5	02:10:13	0.04
6/12/97	05:46:48	3	01:15:08	0.04
6/13/97	00:00:23	0	00:00:00	0.00
6/14/97	03:02:54	2	00:34:48	0.06
6/15/97	01:00:24	3	00:26:13	0.11
6/16/97	01:34:54	0	00:13:54	0.00
6/17/97	07:01:38	4	01:55:50	0.03
6/18/97	01:51:27	5	00:42:01	0.12
6/19/97	01:54:17	7	00:56:22	0.12
6/20/97	01:13:00	1	00:40:55	0.02
6/21/97	02:56:49	2	01:38:53	0.02
6/22/97	07:59:54	1	00:23:16	0.04
6/23/97	08:33:18	2	00:55:57	0.04
6/24/97	05:27:51	5	01:40:51	0.05
6/25/97	05:32:36	3	00:29:53	0.10
6/26/97	05:53:57	1	00:49:16	0.02
6/27/97	01:50:21	0	01:02:29	0.00
6/28/97	03:04:27	1	00:00:07	8.57
6/29/97	02:13:31	0	00:40:52	0.00
6/30/97	08:08:58	2	00:40:50	0.05
7/01/97	04:51:25	3	01:21:51	0.04
7/02/97	04:40:22	3	02:17:51	0.02
7/03/97	03:20:35	3	00:28:56	0.10
7/07/97	04:08:56	4	01:09:06	0.06
7/08/97	07:51:08	0	00:37:50	0.00
7/09/97	03:01:07	2	00:16:07	0.12
7/10/97	02:22:00	0	00:16:33	0.00
7/12/97	03:55:35	1	01:31:51	0.01
7/13/97	06:33:09	0	00:50:28	0.00

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond:93/97*.

5. Response Rates

Table 5.1 presents information on the final disposition by mode of interview for all cases that were initially included in the sample. Of the 11,192 cases identified as eligible B&B sample members (through either the interviewing or transcript component of B&B:93/94), 30 were subsequently found to be out of scope or ineligible. The 29 out-of-scope cases were sample members who have died since 1993; one case was identified as ineligible when it was determined that the respondent had never received a baccalaureate degree.

Interviews were completed with 10,093 of the 11,162 eligible B&B:93/97 cases, for a final unweighted response rate of 90.4 percent. The majority of interviews, 63.9 percent, were conducted by telephone interviewers located at a central facility using a computer-assisted telephone interviewing system. Less than one percent of cases were finalized in the phone center as non-respondents; these cases were hostile refusals, primarily classified as such due to their threats of taking legal action should they be contacted again.

The remaining 4,000 cases (35.8 percent) were then sent to field interviewers who were geographically dispersed across the country. The vast majority of these fielded cases were sample members whom the telephone center was either unable to locate or unable to convert their initial refusals to participate. Field interviewers also used a computer-assisted interviewing system. The system and their assigned cases were loaded into their individual laptop computers; interviews were primarily conducted by telephone but some were completed in-person. Field interviewers completed an additional 2,954 cases, 73.8 percent of all fielded cases, contributing 26.5 percent to the final response rate of 90.4 percent.

An examination of the final non-respondents indicates the success of NORC staff's locating and refusal conversion efforts. Just 1.5 percent of the sample--2.7 percent of the locating problem cases--were finalized as unlocatable while only 2.6 percent of the sample were finalized as refusals, compared to 5.8 percent in B&B:93/94. Much of the remaining 5.5 percent non-response is attributable to sample members who were either out of the country or not available at any time during the time frame of the survey.

Table 5.2 presents more detailed information on respondents and non-respondents by age (calculated as of 7/1/97), gender, and race. While response rates are similar across many of these demographic subgroups, some distinctive differences exist. Response rates decrease slightly with age (93.1 percent of those under 26 compared to 90.4 percent of those over 30 participated) but participation among males and females is approximately equal. Response rates are also similar among whites, blacks, and American Indians (ranging from 89.5 percent to 91.6 percent) but are substantially lower for Asians/Pacific Islanders (only 82.2 percent) and those identifying themselves as "other" (73.8 percent).

Table 5.1.--Response rates, by mode of interview

B&B:93/97 sample		Phone	Field	Total
Total		7,192	4,000	11,192
Ineligible		23	7	30
Eligible		64.2%	35.8%	100.0%
		7,169	3,993	11,162
Complete	(percent)	63.9%	26.5%	90.4%
	(number)	7,139	2,954	10,093
Final refusal	(percent)	0.3%	2.3%	2.6%
	(number)	30	257	287
Unlocated	(percent)	0.0%	1.5%	1.5%
	(number)	0	168	168
Other non-response	(percent)	0.0%	5.5%	5.5%
	(number)	0	614	614

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond:93/97*.

Table 5.2.--Case disposition, by demographic characteristics of sample

	Complete	Refused	Unlocatable	Other non-response	Total eligible
Total	90.4% 10,093	2.6% 287	1.5% 168	5.5% 614	100.0% 11,162
Age					
Under 26	93.1% 1,171	1.9% 24	1.2% 15	3.8% 48	100.0% 1,258
26 - 29	91.1% 5,950	2.6% 171	1.4% 90	4.9% 319	100.0% 6,530
30 or over	90.4% 2,915	2.4% 78	1.7% 54	5.5% 178	100.0% 3,225
Missing	38.3% 57	9.4% 14	6.0% 9	46.3% 69	100.0% 149
Gender					
Male	90.5% 4,357	2.4% 117	1.7% 82	5.4% 260	100.0% 4,817
Female	90.4% 5,736	2.7% 170	1/4% 86	5.6% 354	100.0% 6,345
Race					
White	91.6% 8729	2.6% 251	1.0% 98	4.8% 456	100.0% 9534
Black	89.5% 611	1.9% 13	2.9% 20	5.7% 39	100.0% 683
American Indian	91.3% 73	1.3% 1	1.3% 1	6.3% 5	100.0% 80
Asian/Pacific Islander	82.2% 410	3.2% 16	6.4% 32	8.2% 41	100.0% 499
Other	73.8% 270	1.6% 6	4.6% 17	20% 73	100.0% 366

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

6. Evaluation of Instrument

One can look at several factors in assessing the efficacy of the survey instrument. Three which will be discussed here are the interview length, the accuracy of interviewer coding when using on-line coding utilities, and the level of individual item nonresponse. Readers may refer to appendix H for a copy of the computer-assisted interview instrument. Appendix E lists all of the items (variables) collected in the B&B:93/97 study, as well as computed variables derived from these data.

6.1 Length of Interview

The computer-assisted interview instrument used in this study included several “time stamps” which provide data on the average amount of time taken by the respondent to complete each section. Table 6.1 shows the average length of a completed interview for B&B:93/97 at almost 33 minutes (only one minute longer than the average administration time in the first follow-up). When looking at administration time by section, clearly the longest section was that which collected data about employment since the last interview date, with an average time of 11.5 minutes. The next highest administration time (7.5 minutes) was for the final section, but this is partially due to the fact that this final section was the longest in terms of number of questions. A little over six minutes were spent collecting information about post-baccalaureate education and internships, and an average of about two minutes were spent gathering data on respondents’ teaching experiences. Not counting the locating section, which gathered address and telephone numbers for the respondent, parents, and other contacts, the average interviewing time was almost 28 minutes.

Table 6.1.--Interview administration time, by section
(Average number of minutes respondents spent answering questions)

Section Name	Minutes
Total	32.8
Post-baccalaureate education section	6.4
Teaching section	2.4
Employment section	11.5
Final section: demographic, civic participation, household, debt information	7.5
Locating (address and contact) section	5.1

NOTE: Due to rounding, details may not add up to total.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

6.2 Evaluation of On-line Coding Accuracy

The B&B:93/97 computer-assisted interview instrument made use of five coding programs developed by NCES. These programs were used to code postsecondary institutions (IPEDS), elementary and secondary schools (ELSEC), major field of study, industry, and occupation. The coding programs for industry, occupation, and major required interviewers to enter the brief “verbatim” text supplied by the

respondent. The coding program then suggested several possible codes and the interviewer was to select the most appropriate code. Using the IPEDS and ELSEC coding programs to code postsecondary institutions and elementary/secondary schools involved searching through a multi-level database of states, cities within states, and finally, schools within the selected city.

To judge the quality of the coding being done by the interviewers, NORC performed an export of ten percent of each week's completed cases. The original input and coding results for these cases were loaded into a computer-assisted instrument which was used by specially trained coders. For these programs, the coders were asked to use the verbatim text entered by the interviewer and select an appropriate code.

If the code selected disagreed from that originally chosen by the interviewer, the coder was shown the interviewer-selected code and was asked to judge if that code was reasonable or not. The results of this verification process are displayed in table 6.2.

Interviewers did a fairly good job in using the coding programs and the differences in coding accuracy between the programs is relatively small. In assessing the major coding, the reasons for the relatively large percentage of "reasonable but different" codes, and the smaller percentage of these cases where sufficient text was entered to allow verification, are probably the same. In conducting the survey, interviewers were more cognizant of reducing respondent burden rather than fully documenting a verbatim string. Interviewers had the luxury of being able to verify with the respondent if a question arose about the correct major category, while coders only had the verbatim string from which to work. Additionally, while the industry and occupation coding programs had been greatly enhanced (with more examples for the user, more concise categories, and a more extensive look-up dictionary), the major coding program was still relatively complex. For example, interviewers (and coders) had a choice of 18 different majors grouped under the broad category of "Health." So a broad entry of "medicine" or "nursing" could bring up as host of possible categories, which the interviewer could select by talking with the respondent.

To examine the accuracy of school coding, coders were given the text entered by interviewers when the school named by the respondent could not be found in the coding program. In these cases, coders were asked to judge the completeness of the information entered by the interviewer: was the name, city and state information sufficiently complete so that it can be coded later? Interviewers performed differently depending on whether they used the IPEDS or ELSEC programs. About 94 percent provided sufficient information to allow a later determination of the correct IPEDS code for postsecondary institutions, while only 76 percent provided that level of information in the ELSEC program.

Upon further examination of the verbatim text from the ELSEC program, it was discovered that 18 percent of the inadequately documented cases were actually cases in which the respondent either refused to provide, or did not remember, the name of the school. Furthermore, a significant portion of the remaining uncodable cases were due to the fact that the program inserted the text "*UNKNOWN" if the interviewer was unable to select the city.

Table 6.2--Reliability of interviewer coding using on-line coding programs

Coding program	Percent of cases where sufficient text was entered to allow verification	Percent coder and interviewer agreement	Verified cases	
			Percent coder and interviewer disagreement:	
			Interviewer code reasonable	Interviewer code incorrect
Major	86.3	81.7	12.8	5.5
Industry	97.2	91.8	5.6	2.7
Occupation	95.8	93.3	4.1	2.6
Postsecondary institution	94.2	--	--	--
Elementary/secondary school	76.4	--	--	--

NOTE: Due to rounding, details may not equal 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond:93/97.

6.3 Nonresponse by Item

One of the goals of B&B:93/97 was to reduce the item non-response, which results from respondents declining to answer the question, or responding that they could not give an accurate answer. NORC accomplished this goal by using a variety of innovative techniques to build respondent rapport, including the use of conversational interviewing. Nevertheless, there were still some items, particularly those requiring the collection of specific numeric figures (e.g., test scores and dates; income figures), that were answered by less than 90 percent of respondents who were asked. These items are displayed in table 6.3.³

Of the approximately 1,800 variables included in the final data set, there were almost 50 items with nonresponse rates over ten percent. Almost half of these items, however, are accounted for by the fact that only five or fewer respondents were asked the question; many of these are the third or fourth iterations of a looped question. Items involving knowledge of specific dates, such as those for emigration, employment, and school attendance were found to have substantial rates of nonresponse; the largest type of nonresponse for these items are the “don’t know” responses. In most instances, “don’t know” signifies that the

³ This list does not include items that were pre-loaded using B&B:93/94 data, or other items that were designed as components of composite variables.

respondent had difficulty recalling the information requested and could not provide a number. High levels of “don’t know” responses are also evident in the items regarding the respondent’s education loans and loans of the respondent’s spouse.

Refusal to answer income and salary questions continued, as in the first follow-up (and in other similar surveys), to be among a significant proportion of the nonresponse items. More specifically, these items included questions concerning academic year base salary of teaching jobs, as well as income from jobs and other sources. These items had a high percentage of refusal responses. Items involving spouse’s income, in addition to high refusal responses, had a moderate percentage of “don’t know” responses. “Don’t know” responses also accounted for the majority of the nonresponse in items concerning spousal education debt, reflecting what seems to be an overall lack of respondent knowledge of spouse or partner income and debt.

In comparison to the findings of nonresponse in the first follow-up, there has been a reduction in the number of items with significant nonresponse. Although still high, the refusal rate of income and salary items has decreased from the first follow-up. This could be explained by the fact that NORC has established enough of a rapport with respondents (the majority of whom have participated in the first round of the survey) to be able to elicit their confidence in answering these types of questions.

Table 6.3.--Item nonresponse for items with over ten percent nonresponse

Variable name	Variable label	Number asked	Percent don't know	Percent refused	Percent combined nonresponse
B2FEMIG	Year father emigrated to US	1,077	9.6%	1.4%	11.0%
B2ADGRED	Date took advanced GRE	45	11.1%	0.0%	11.1%
B2P02S05	School 2 fifth period start date	3	0.0%	33.3%	33.3%
B2P02E05	School 2 fifth period end date	3	0.0%	33.3%	33.3%
B2P03DGD	Date received degree at school 2	5	20.0%	0.0%	20.0%
B2P03SCP	Current second program type at school 3	1	0.0%	100.0%	100.0%
B2P04S01	School 4 first period start date	18	11.1%	0.0%	11.1%
B2P04E01	School 4 first period end date	17	11.8%	0.0%	11.8%
B2P05S01	School 5 first period start date	4	25.0%	0.0%	25.0%
B2P05E01	School 5 first period end date	4	25.0%	0.0%	25.0%
B2P05T01	School 5 first period enroll status	4	25.0%	0.0%	25.0%
B2SAL03	Academic year base salary at job 3	96	7.3%	4.2%	11.5%
B2SAL04	Academic year base salary at job 4	21	19.0%	0.0%	19.0%
B2SAL05	Academic year base salary at job 5	8	12.5%	0.0%	12.5%
B2PTCH37	Periods taught visual handicap	3	33.3%	0.0%	33.3%
B2LOOK09	Looking for work between job 8 and 9	5	20.0%	0.0%	20.0%
B2JB10ST	Start date job 10	12	16.7%	0.0%	16.7%
B2JB10EN	End date job 10	12	16.7%	0.0%	16.7%
B2JB10FP	Full or part-time at job 10	12	16.7%	0.0%	16.7%
B2EXBGJB	Date R expects to begin a full-time job	2,108	9.7%	0.9%	10.6%
B2S05BGD	Date began attending other school 5	39	10.3%	0.0%	10.3%
B2S05END	Date stopped attending other school 5	39	10.3%	0.0%	10.3%
B2S07BGD	Date began attending other school 7	3	0.0%	33.3%	33.3%
B2S07END	Date stopped attending other school 7	3	0.0%	33.3%	33.3%
B2S07PRG	School 7 degree program	3	0.0%	33.3%	33.3%

Table 6.3.--Item nonresponse for items with over ten percent nonresponse--Continued

Variable name	Variable label	Number asked	Percent don't know	Percent refused	Percent combined nonresponse
B2S08IPD	IPEDS code for other undergraduate school 8	1	0.0%	100.0%	100.0%
B2S08BGD	Date began attending other school 8	1	0.0%	100.0%	100.0%
B2S08END	Date stopped attending other school 8	1	0.0%	100.0%	100.0%
B2S08PRG	School 8 degree program	1	0.0%	100.0%	100.0%
B2MRCH03	Change in marital status 3	9	0.0%	11.1%	11.1%
B2DRBC04	Birth date for child (4)	8	0.0%	25.0%	25.0%
B2DRBC05	Birth date for child (5)	3	0.0%	66.7%	66.7%
B2DRBC06	Birth date for child (6)	2	0.0%	50.0%	50.0%
B2DRBC07	Birth date for child (7)	1	0.0%	100.0%	100.0%
B2TOTINR	Estimated income from all sources	9,734	3.2%	8.4%	11.7%
B2ANNINR	Respondent estimate of job income	9,585	2.8%	8.5%	11.3%
B2TINCSP	Spouse's income from all sources	5,154	7.3%	10.3%	17.6%
B2TINRSP	Estimated spouse income from all sources	4,874	7.7%	10.9%	18.6%
B2AINCSP	Spouse's income from job	5,150	6.2%	10.4%	16.7%
B2AINRSP	Estimate of spouse's income from job	4,824	6.7%	11.1%	17.8%
B2TOTLNS	Amount spouse borrowed for education	1,766	22.7%	2.2%	24.8%
B2TOTBAL	Spouse's loans still owed	1,744	23.3%	2.5%	25.8%

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond: 93/97*.

7. Weights and Design Effects Development

B&B:93/97 final weights were calculated by making a nonresponse adjustment to the baseline B&B weight calculated for B&B:93/94. This baseline B&B weight is an adjustment of the baseline National Postsecondary Student Aid Survey (NPSAS:93) weight. NPSAS:93 sample development and weights calculation documentation can be found in the *Sampling Design and Weighting Report for the 1993 National Postsecondary Student Aid Study* (Whitmore, Traccarella, and Iannacchione, 1995). More details than are given below on the development of weights during B&B:93/94 can be found in *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-Up Methodology Report* (Green et al., 1996). The B&B:93/94 weights adjustment started with the NPSAS:93 base weight calculated for all B&B eligible sample members.

A summary of the interim weight components and final B&B weight distribution can be summarized as follows:

Variables defined in the weight development process:

B ₀ :	B&B:93/94 base weight (NPSAS:93 base weight post-stratified to baccalaureate degree control totals, by institution stratum)
B ₁ :	B&B:93/94 final weight adjusted for nonresponse (non-respondents are assigned a value = 0)
B ₂ :	B&B:93/97 final weight adjusted for nonresponse (non-respondents are assigned a value = 0)
P ₂ :	Panel weight for all three surveys: NPSAS:93, B&B:93/94, and B&B:93/97 (non-zero only for respondents to all three)
B&BSTRAT:	Adjusted institution stratum for B&B weighting
B&BTYPE:	Adjusted student type for B&B weighting

The final distributions for B₀, B₁, B₂ and P₂ are listed in table 7.1.

Table 7.1.-- Final weight distributions

Variable	Sum of weights*	Number of non-zero observations	Number of zero observations	Mean based on non-zero weight	Standard Deviation	Minimum	Maximum
B ₀	1,184,758.02	11,192	0	105.86	86.15	1.52	2,446.50
B ₁	1,184,758.04	10,080	1,112	117.54	95.57	1.56	3,149.07
B ₂	1,181,375.58	10,093	1,099	117.05	95.54	1.61	3,182.02
P ₂	1,181,375.58	9,274	1,918	127.39	102.15	1.77	3,357.67

* B₂ and P₂ have a smaller sum of weights because of 30 B&B:93/97 ineligible (29 deceased).

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149); Baccalaureate and Beyond:93/97.

7.1 B&B:93/97 Weights Development Procedure

The B&B base weight (B_0) was calculated for B&B:93/94. To create B_0 , two modifications were made to the NPSAS:93 weight for the 11,192 B&B eligibles (also determined for B&B:93/94):

1. Twenty-three cases without NPSAS:93 weights had their weights imputed by using the average across all non-zero weights within the same institution, and
2. These NPSAS:93 weights were post-stratified to the number of baccalaureate degrees awarded for the 1992-93 academic year, by institution type (B&BSTRAT).

The resulting B&B base weight (B_0) will be used as the basis for all future B&B weights.

Step 1. Adjust B_0 for non-response and calculate final B&B:93/97 weight

The non-response adjustment to B_0 for the B&B:93/97 weight was calculated using the following process:

1. Non-response adjustment cells were created by cross-classifying cases by two variables: institution stratum and student type.
2. Each cell was checked to see that it met two conditions:
 - i) the cell contained at least 15 students, and
 - ii) the weighted response rate for the cell was at least two-thirds (67%) of the overall weighted response rate.
3. Any cells that did not meet both conditions were combined into larger cells. This was done by combining student types 3 and 4 within the same institutional stratum. If this larger cell did not meet the criteria specified above, all student types from that institutional stratum were combined.
4. Once all cells were defined, the B&B weight variable was multiplied by the inverse of the weighted response rate for the cell.

In more formal terms, if we define the indicator $I_{hbi} = 1$ if surveyed B&B sample member i in student stratum b and institutional stratum h responded to the survey, and let $I_{hbi} = 0$ if the sample member did not respond to the survey, then the response rate for sample members in institutional stratum h and student stratum b , R_{hb} , is

$$R_{hb} = \left(\sum_{i=1}^{n_{hb}} B_{0,i} I_{hbi} \right) / \left(\sum_{i=1}^{n_{hb}} B_{0,i} \right)$$

where n_{hb} is the number of sampled students in student stratum b and institutional stratum h . The final B&B:93/94 weight adjusted for nonresponse, B_2 , is

$$B_2 = B_0/R_{hb}.$$

Final weighted (by B_0) B&B:93/97 response rates for each stratum are presented in table 7.2.

Step 2. Adjust B_0 for non-response and calculate final B&B:93/97 panel weight

The non-response adjustment to B_0 for the B&B:93/97 panel weight was calculated using the same process used in Step 1 above, with only the definition of a respondent changing. In calculating the panel weight, we defined the indicator $I_{hbi} = 1$ if surveyed B&B sample member i in student stratum b and institutional stratum h responded to all three of the B&B surveys (NPSAS:93, B&B:93/94, and B&B:93/97), and let $I_{hbi} = 0$ if the sample member did not respond to all three surveys. Final weighted (by B_0) panel response rates for each stratum are presented in table 7.3.

Table 7.2.--Weighted (by B&B:93/97 weight B₀) B&B:93/97 response rates by strata

B&BSTRAT	B&BTYPE	N	Response	Nonresponse	Rate
Total		11,192	1,063,715.69	117,659.87	0.90040
1	3	27	8,837.81	0.00	1.00000
1	4	39	7,319.04	1,034.15	0.87620
1	5	378	27,781.76	2,910.00	0.90519
2	3	155	52,588.35	2,951.27	0.94686
2	4	174	34,120.18	3,893.57	0.89757
2	5	2,419	184,353.25	17,872.65	0.91162
3	3	38	14,451.40	1,373.19	0.91322
3	4	59	12,847.78	1,828.18	0.87543
3	5	759	65,709.84	8,233.25	0.88865
4	3,4	23	4,020.74	801.38	0.83381
4	5	294	21,572.75	2,489.91	0.89652
5	3	17	6,800.93	1,047.52	0.86653
5	4	42	9,666.08	988.28	0.90724
5	5	379	34,188.75	3,259.59	0.91296
6	3	63	19,362.89	1,929.59	0.90938
6	4	62	12,555.62	1,285.24	0.90714
6	5	830	63,847.37	7,419.28	0.89589
7	3,4	29	5,850.00	1,549.38	0.79061
7	5	126	7,390.00	1,066.62	0.87387
8	3,4,5	155	10,965.69	732.46	0.93739
9	3	31	10,200.93	380.54	0.96404
9	4	27	4,250.71	942.30	0.81854
9	5	328	23,818.60	2,468.36	0.90610
10	3	119	35,742.61	5,588.15	0.86479
10	4	183	31,812.37	5,843.76	0.84481
10	5	1,726	120,749.26	12,868.23	0.90369
11	3,4	19	2,213.98	283.87	0.88635
11	5	155	4,576.74	539.25	0.89460
12	3	60	17,446.73	1,130.20	0.93916
12	4	135	25,678.11	2,938.75	0.89731
12	5	1,070	69,874.59	7,917.97	0.89822
13	3,4	18	1,595.85	65.35	0.96066
13	5	109	3,871.46	217.34	0.94685
14	3	17	9,394.49	0.00	1.00000
14	4	20	2,153.09	924.82	0.69953
14	5	111	9,392.34	594.27	0.94049
15	3,4	16	2,882.54	0.00	1.00000
15	5	109	5,643.27	800.91	0.87572
16	3	28	8,722.73	2,622.43	0.76885
16	4	92	20,496.70	2,667.51	0.88484
16	5	751	48,968.36	6,200.36	0.88761

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.3.--Weighted (by B&B:93/97 weight B₀) PANEL response rates by strata

B&BSTRAT	B&BTYPE	N	Response	Nonresponse	Rate
Total		11,192	979,507.80	201,867.78	0.82912
1	3	27	8,154.94	682.86	0.92273
1	4	39	6,539.95	1,813.24	0.78293
1	5	378	25,700.71	4,991.05	0.83738
2	3	155	49,639.47	5,900.15	0.89377
2	4	174	31,640.06	6,373.69	0.83233
2	5	2,419	168,275.07	33,950.83	0.83211
3	3	38	12,990.04	2,834.55	0.82088
3	4	59	11,821.42	2,854.54	0.80550
3	5	759	58,245.31	15,697.79	0.78770
4	3,4	23	4,020.74	801.38	0.83381
4	5	294	19,468.32	4,594.34	0.80907
5	3	17	6,800.93	1,047.52	0.86653
5	4	42	9,245.63	1,408.73	0.86778
5	5	379	31,567.20	5,881.15	0.84295
6	3	63	18,159.64	3,132.84	0.85287
6	4	62	11,242.67	2,598.19	0.81228
6	5	830	58,326.55	12,940.11	0.81843
7	3,4	29	5,470.36	1,929.02	0.73930
7	5	126	7,036.47	1,420.15	0.83207
8	3,4,5	155	9,717.49	1,980.66	0.83069
9	3	31	9,388.07	1,193.41	0.88722
9	4	27	3,822.27	1,370.74	0.73604
9	5	328	21,468.42	4,818.54	0.81669
10	3	119	35,001.59	6,329.18	0.84687
10	4	183	29,205.90	8,450.24	0.77559
10	5	1,726	111,450.02	22,167.47	0.83410
11	3,4	19	2,213.98	283.87	0.88635
11	5	155	4,265.44	850.55	0.83375
12	3	60	15,971.36	2,605.56	0.85974
12	4	135	23,605.88	5,010.98	0.82489
12	5	1,070	63,434.81	14,357.74	0.81544
13	3,4	18	1,459.06	202.14	0.87832
13	5	109	3,512.38	576.42	0.85903
14	3	17	9,394.49	0.00	1.00000
14	4	20	1,831.57	1,246.34	0.59507
14	5	111	8,768.61	1,217.99	0.87804
15	3,4	16	2,882.54	0.00	1.00000
15	5	109	4,752.86	1,691.32	0.73754
16	3	28	8,266.41	3,078.74	0.72863
16	4	92	19,620.36	3,543.85	0.84701
16	5	751	45,128.81	10,039.91	0.81801

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

7.2 Design Effects

The design effect is defined as the ratio of the variance, corrected for the sampling design, to the variance based on a simple random sample. Most complex multi-stage sampling designs result in a design effect greater than one, that is, the variance of an estimate is actually larger than the variance would be had the data been based on a simple random sample (SRS). To estimate the variance using information about the sample design, it is necessary to use statistical procedures such as Taylor Series approximations, Balanced Repeated Replication, or Jackknife Repeated Replication. For B&B:93/97, NORC used the Taylor Series procedure to calculate the standard errors.

The impact of departures from simple random sampling on the precision of sample estimates is often measured by the design effect (designated as DEFF), the ratio of the design-corrected variance to the variance based on SRS assumptions. The square root of the design effect (also called the root design effect, and designated as DEFT) is also useful. The following formulas defined the design effects and root design effects for this section:

$$\text{DEFF} = \frac{(\text{DESIGN-SE})^2}{(\text{SRS-SE})^2}$$

$$\text{DEFT} = \frac{(\text{DESIGN-SE})}{(\text{SRS-SE})}$$

where DESIGN-SE designates the standard error of an estimate calculated by taking into account the complex nature of the survey design, and SRS-SE designates the standard error of the same estimate calculated as if the survey design was a simple random sample.

Standard errors for thirty proportions based on B&B:93/97 data were calculated, both for B&B:93/97 respondents, and for B&B panel respondents (respondents to all three B&B surveys: NPSAS:93, B&B:93/94, and B&B:93/97). Tables 7.4 through 7.12 present estimates of the design effects for these variables for various subgroups of the B&B:93/97 population. The design effects presented in table 7.4 are based on the entire population; later tables present estimates for subgroups by sex, race, and type of school attended. Tables 7.13 through 7.21 present a similar set of tables of design effect estimates for these same 30 variables for various subgroups of the B&B panel respondents.

For each variable and group, the table contains the percent estimate, the design-corrected standard error, the standard error for the same percent estimate based on SRS assumptions, the unweighted n , the root design effect, and the design effect.

Researchers who use the Data Analysis System prepared for use with B&B:93/97 will find that the program automatically produces design-corrected standard errors. Researchers using the restricted use files are cautioned to use a package (such as SUDAAN or OSIRIS) which can produce the design-corrected standard errors, or to adjust the standard errors computed under simple random sample assumptions, as produced by typical packages such as SPSS or SAS, by multiplying them by the mean root design effect for that subgroup.

Table 7.4.--Design effects for all respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	17.68	0.52	0.38	10,087	1.37	1.87
Attended school since graduation	40.88	0.74	0.49	10,089	1.52	2.30
Received aid (of those attending school since BA)	55.54	1.22	0.87	3,239	1.40	1.96
Had prior related job experience	68.27	0.62	0.47	9,659	1.31	1.71
Employed since last interview	96.72	0.23	0.18	10,059	1.31	1.72
Degree is required for job	62.37	0.66	0.49	9,614	1.34	1.79
Received other similar job offers	37.41	0.71	0.51	8,881	1.37	1.89
Degree is closely related to job	54.50	0.70	0.51	9,667	1.38	1.91
Job has career potential	54.62	0.72	0.51	9,644	1.42	2.03
Job offers health insurance	83.24	0.48	0.38	9,659	1.26	1.59
Ever considered teaching	41.65	0.69	0.49	10,058	1.40	1.97
Received training from employer (last 12 mos.)	43.78	0.65	0.51	9,634	1.29	1.66
Has done volunteer work	42.65	0.69	0.49	10,051	1.40	1.97
Voted in 1996 presidential election	75.40	0.64	0.43	10,051	1.49	2.23
Speaks a foreign language	64.46	0.83	0.48	10,053	1.74	3.04
Has children	28.74	0.98	0.45	10,089	2.17	4.69
Is saving money	68.08	0.70	0.47	10,016	1.49	2.23
Has educational loans	48.95	0.80	0.50	9,987	1.60	2.55
Owens home	41.48	0.94	0.49	10,026	1.90	3.62
Owens car	89.42	0.52	0.31	10,018	1.69	2.86
Has non-educational debt	52.08	0.72	0.50	9,962	1.44	2.07
Has graduate loan(s)	12.42	0.47	0.33	9,982	1.43	2.04
Disabilities interfere with work	1.96	0.17	0.14	10,049	1.19	1.42
Any months with more than 1 job	55.59	0.67	0.51	9,627	1.33	1.76
Any unemployment since graduation	39.47	0.67	0.49	10,093	1.37	1.88
Applied to graduate school since last interview	17.67	0.51	0.38	10,090	1.34	1.79
Is single, never married	42.47	0.92	0.49	10,040	1.86	3.47
Taken the GRE	6.86	0.34	0.25	10,072	1.36	1.84
Very satisfied with job=s promotion opportunity	37.43	0.65	0.50	9,514	1.31	1.71
Very satisfied with job=s pay	32.24	0.61	0.48	9,652	1.28	1.63
SUMMARY STATISTICS						
Mean					1.46	2.17
Minimum					1.19	1.42
Maximum					2.17	4.69

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.5.--Design effects for female respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	17.03	0.65	0.50	5,734	1.32	1.73
Attended school since graduation	42.29	0.91	0.65	5,733	1.39	1.94
Received aid (of those attending school since BA)	51.78	1.66	1.17	1,813	1.42	2.01
Had prior related job experience	68.73	0.79	0.63	5,496	1.26	1.60
Employed since last interview	96.66	0.31	0.24	5,714	1.31	1.71
Degree is required for job	64.06	0.88	0.65	5,472	1.35	1.83
Received other similar job offers	38.48	0.93	0.68	5,071	1.35	1.83
Degree is closely related to job	58.05	0.88	0.67	5,501	1.32	1.75
Job has career potential	51.90	0.89	0.67	5,485	1.32	1.73
Job offers health insurance	82.08	0.62	0.52	5,496	1.19	1.42
Ever considered teaching	48.26	0.90	0.66	5,718	1.36	1.86
Received training from employer (last 12 mos.)	44.89	0.82	0.67	5,477	1.22	1.49
Has done volunteer work	44.56	0.87	0.66	5,715	1.32	1.75
Voted in 1996 presidential election	77.15	0.80	0.56	5,711	1.43	2.05
Speaks a foreign language	64.57	0.99	0.63	5,715	1.57	2.46
Has children	31.98	1.12	0.62	5,733	1.82	3.32
Is saving money	67.09	0.87	0.62	5,695	1.40	1.95
Has educational loans	48.58	0.98	0.66	5,677	1.47	2.17
Owens home	44.04	1.15	0.66	5,700	1.74	3.03
Owens car	89.64	0.61	0.40	5,695	1.51	2.29
Has non-educational debt	54.82	0.86	0.66	5,662	1.30	1.69
Has graduate loan(s)	12.29	0.57	0.44	5,674	1.31	1.72
Disabilities interfere with work	2.00	0.20	0.19	5,711	1.06	1.13
Any months with more than 1 job	56.11	0.88	0.67	5,471	1.31	1.73
Any unemployment since graduation	39.17	0.84	0.64	5,736	1.31	1.71
Applied to grad school since last interview	18.50	0.65	0.51	5,733	1.27	1.61
Is single, never married	38.71	1.10	0.64	5,709	1.70	2.90
Taken the GRE	7.35	0.45	0.35	5,724	1.30	1.70
Very satisfied with job=s promotion opportunity	34.85	0.85	0.65	5,402	1.32	1.73
Very satisfied with job=s pay	31.34	0.78	0.63	5,491	1.25	1.56
 SUMMARY STATISTICS						
Mean					1.37	1.91
Minimum					1.06	1.13
Maximum					1.82	3.32

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.6.--Design effects for male respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	18.48	0.81	0.59	4,353	1.38	1.90
Attended school since graduation	39.16	1.05	0.74	4,356	1.42	2.01
Received aid (of those attending school since BA)	60.11	1.68	1.30	1,426	1.30	1.68
Had prior related job experience	67.73	0.94	0.72	4,163	1.30	1.69
Employed since last interview	96.80	0.33	0.27	4,345	1.22	1.49
Degree is required for job	60.31	1.02	0.76	4,142	1.35	1.81
Received other similar job offers	36.09	1.03	0.78	3,810	1.33	1.76
Degree is closely related to job	50.20	1.04	0.77	4,166	1.35	1.82
Job has career potential	57.92	1.10	0.77	4,159	1.44	2.07
Job offers health insurance	84.66	0.69	0.56	4,163	1.24	1.54
Ever considered teaching	33.61	0.96	0.72	4,340	1.34	1.79
Received training from employer (last 12 mos.)	42.44	0.97	0.77	4,157	1.27	1.61
Has done volunteer work	40.31	1.02	0.75	4,336	1.37	1.87
Voted in 1996 presidential election	73.27	0.98	0.67	4,340	1.46	2.14
Speaks a foreign language	64.33	1.11	0.73	4,338	1.53	2.34
Has children	24.80	1.20	0.65	4,356	1.83	3.35
Is saving money	69.28	1.03	0.70	4,321	1.47	2.16
Has educational loans	49.40	1.07	0.76	4,310	1.40	1.97
Owens home	38.36	1.22	0.74	4,326	1.64	2.70
Owens car	89.14	0.70	0.47	4,323	1.47	2.16
Has non-educational debt	48.75	1.09	0.76	4,300	1.43	2.05
Has graduate loan(s)	12.58	0.68	0.51	4,308	1.35	1.82
Disabilities interfere with work	1.92	0.26	0.21	4,338	1.26	1.59
Any months with more than 1 job	54.96	1.06	0.77	4,156	1.38	1.89
Any unemployment since graduation	39.83	1.01	0.74	4,357	1.36	1.86
Applied to grad school since last interview	16.66	0.70	0.56	4,357	1.24	1.53
Is single, never married	47.04	1.20	0.76	4,331	1.58	2.48
Taken the GRE	6.25	0.46	0.37	4,348	1.26	1.60
Very satisfied with job=s promotion opportunity	40.54	0.99	0.77	4,112	1.30	1.68
Very satisfied with job=s pay	33.33	0.97	0.73	4,161	1.32	1.74
SUMMARY STATISTICS						
Mean					1.39	1.94
Minimum					1.22	1.49
Maximum					1.83	3.35

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.7.--Design effects for black respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	14.24	1.74	1.44	591	1.21	1.46
Attended school since graduation	40.43	2.47	2.02	591	1.22	1.50
Received aid (of those attending school since BA)	63.29	4.81	3.34	209	1.44	2.07
Had prior related job experience	70.29	2.53	1.94	558	1.31	1.71
Employed since last interview	97.81	0.51	0.61	584	0.85	0.72
Degree is required for job	58.05	2.83	2.10	555	1.35	1.82
Received other similar job offers	36.30	2.45	2.10	526	1.17	1.37
Degree is closely related to job	49.78	2.77	2.12	559	1.31	1.71
Job has career potential	45.99	2.82	2.11	557	1.33	1.78
Job offers health insurance	88.65	1.36	1.34	558	1.01	1.02
Ever considered teaching	53.17	2.96	2.06	590	1.44	2.07
Received training from employer (last 12 mos.)	42.55	2.77	2.09	559	1.32	1.75
Has done volunteer work	47.79	2.75	2.07	585	1.33	1.77
Voted in 1996 presidential election	81.85	2.14	1.59	586	1.34	1.80
Speaks a foreign language	68.84	2.64	1.91	586	1.38	1.90
Has children	41.26	2.63	2.03	590	1.30	1.68
Is saving money	67.13	2.36	1.95	582	1.21	1.47
Has educational loans	64.03	2.99	1.99	585	1.50	2.26
Owens home	28.55	2.76	1.87	585	1.48	2.19
Owens car	82.23	2.45	1.58	584	1.54	2.39
Has non-educational debt	61.73	2.58	2.03	577	1.27	1.63
Has graduate loan(s)	16.17	1.86	1.53	579	1.22	1.48
Disabilities interfere with work	1.21	0.37	0.45	585	0.81	0.66
Any months with more than 1 job	58.39	2.76	2.11	545	1.31	1.71
Any unemployment since graduation	45.11	2.67	2.05	591	1.30	1.70
Applied to grad school since last interview	21.77	2.39	1.70	591	1.40	1.97
Is single, never married	54.01	2.84	2.06	585	1.38	1.90
Taken the GRE	6.58	1.00	1.02	590	0.98	0.96
Very satisfied with job=s promotion opportunity	30.34	2.41	1.97	547	1.23	1.50
Very satisfied with job=s pay	24.09	2.07	1.81	557	1.14	1.30
 SUMMARY STATISTICS						
Mean					1.27	1.64
Minimum					0.81	0.66
Maximum					1.54	2.39

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.8.--Design effects for Asian respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	18.71	2.61	1.95	401	1.34	1.79
Attended school since graduation	50.63	4.12	2.50	402	1.65	2.72
Received aid (of those attending school since BA)	58.92	5.02	3.95	156	1.27	1.61
Had prior related job experience	68.28	3.65	2.47	356	1.48	2.19
Employed since last interview	92.40	1.66	1.33	397	1.25	1.56
Degree is required for job	63.06	5.18	2.57	355	2.02	4.07
Received other similar job offers	28.48	3.42	2.45	340	1.39	1.94
Degree is closely related to job	48.89	4.41	2.66	355	1.66	2.75
Job has career potential	52.45	4.77	2.66	353	1.79	3.21
Job offers health insurance	84.41	2.40	1.93	356	1.25	1.55
Ever considered teaching	20.29	2.64	2.02	399	1.31	1.71
Received training from employer (last 12 mos.)	49.23	4.64	2.66	353	1.74	3.03
Has done volunteer work	40.78	4.56	2.46	399	1.85	3.43
Voted in 1996 presidential election	43.97	4.19	2.49	397	1.68	2.82
Speaks a foreign language	24.07	4.21	2.14	399	1.96	3.86
Has children	19.06	5.31	1.96	402	2.71	7.33
Is saving money	53.66	4.32	2.51	397	1.72	2.97
Has educational loans	43.29	4.62	2.50	394	1.85	3.42
Owens home	25.74	3.31	2.20	396	1.51	2.27
Owens car	76.95	3.20	2.12	396	1.51	2.28
Has non-educational debt	44.65	4.62	2.51	393	1.84	3.39
Has graduate loan(s)	12.47	1.88	1.67	391	1.13	1.27
Disabilities interfere with work	2.15	0.93	0.73	399	1.28	1.65
Any months with more than 1 job	48.28	4.69	2.61	367	1.79	3.22
Any unemployment since graduation	41.65	3.80	2.46	402	1.54	2.39
Applied to grad school since last interview	18.34	2.29	1.93	401	1.18	1.39
Is single, never married	58.91	4.60	2.47	397	1.86	3.46
Taken the GRE	7.42	1.53	1.31	402	1.17	1.37
Very satisfied with job=s promotion opportunity	30.70	4.09	2.47	350	1.66	2.75
Very satisfied with job=s pay	24.35	3.54	2.28	355	1.55	2.40
SUMMARY STATISTICS						
Mean					1.60	2.66
Minimum					1.13	1.27
Maximum					2.71	7.33

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond: 93/97*.

Table 7.9.--Design effects for Hispanic respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	22.32	2.27	1.82	522	1.24	1.54
Attended school since graduation	43.89	2.79	2.17	523	1.28	1.65
Received aid (of those attending school since BA)	50.98	5.24	3.87	168	1.35	1.83
Had prior related job experience	64.78	2.73	2.17	484	1.26	1.58
Employed since last interview	93.22	1.35	1.10	522	1.23	1.51
Degree is required for job	61.21	2.84	2.22	482	1.28	1.63
Received other similar job offers	36.05	3.04	2.30	438	1.32	1.75
Degree is closely related to job	56.63	2.80	2.25	485	1.24	1.54
Job has career potential	49.54	3.05	2.28	484	1.34	1.80
Job offers health insurance	78.99	2.15	1.85	484	1.16	1.35
Ever considered teaching	48.85	3.04	2.20	519	1.38	1.91
Received training from employer (last 12 mos.)	39.63	2.94	2.23	482	1.32	1.73
Has done volunteer work	33.83	2.86	2.08	520	1.38	1.90
Voted in 1996 presidential election	63.62	3.16	2.11	520	1.50	2.24
Speaks a foreign language	20.76	2.51	1.78	522	1.41	1.99
Has children	35.98	3.47	2.10	522	1.65	2.72
Is saving money	64.73	3.21	2.10	521	1.53	2.35
Has educational loans	59.67	3.12	2.16	519	1.45	2.10
Owens home	41.27	3.18	2.16	522	1.48	2.18
Owens car	86.11	2.18	1.52	521	1.44	2.07
Has non-educational debt	63.64	2.41	2.11	521	1.14	1.31
Has graduate loan(s)	15.27	2.18	1.58	521	1.38	1.91
Disabilities interfere with work	2.90	0.99	0.74	522	1.35	1.81
Any months with more than 1 job	50.84	3.03	2.27	487	1.34	1.79
Any unemployment since graduation	42.08	2.99	2.16	523	1.38	1.91
Applied to grad school since last interview	19.01	2.37	1.72	523	1.38	1.90
Is single, never married	42.21	3.07	2.16	522	1.42	2.01
Taken the GRE	7.97	1.72	1.19	523	1.45	2.09
Very satisfied with job=s promotion opportunity	38.50	2.89	2.23	478	1.30	1.68
Very satisfied with job=s pay	31.28	2.79	2.11	483	1.32	1.74
 SUMMARY STATISTICS						
Mean					1.36	1.85
Minimum					1.14	1.31
Maximum					1.65	2.72

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.10.--Design effects for white respondents - B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	17.37	0.56	0.41	8,403	1.35	1.83
Attended school since graduation	40.11	0.76	0.53	8,403	1.43	2.04
Received aid (of those attending school since BA)	55.20	1.35	0.97	2,651	1.40	1.95
Had prior related job experience	68.21	0.66	0.52	8,103	1.27	1.62
Employed since last interview	97.11	0.24	0.18	8,388	1.31	1.71
Degree is required for job	62.77	0.69	0.54	8,064	1.28	1.63
Received other similar job offers	38.07	0.77	0.56	7,437	1.36	1.85
Degree is closely related to job	55.11	0.74	0.55	8,109	1.34	1.80
Job has career potential	55.68	0.76	0.55	8,092	1.37	1.87
Job offers health insurance	83.17	0.51	0.42	8,104	1.22	1.49
Ever considered teaching	41.40	0.74	0.54	8,380	1.37	1.87
Received training from employer (last 12 mos.)	44.05	0.69	0.55	8,083	1.25	1.56
Has done volunteer work	42.69	0.71	0.54	8,381	1.32	1.74
Voted in 1996 presidential election	77.46	0.64	0.46	8,381	1.40	1.96
Speaks a foreign language	69.33	0.73	0.50	8,380	1.45	2.10
Has children	27.71	0.99	0.49	8,406	2.03	4.12
Is saving money	69.23	0.71	0.51	8,351	1.41	1.98
Has educational loans	47.48	0.87	0.55	8,326	1.59	2.53
Owens home	43.21	0.98	0.54	8,360	1.81	3.27
Owens car	90.88	0.49	0.32	8,353	1.55	2.40
Has non-educational debt	51.04	0.78	0.55	8,307	1.42	2.01
Has graduate loan(s)	11.95	0.48	0.36	8,324	1.34	1.79
Disabilities interfere with work	1.86	0.18	0.15	8,377	1.20	1.44
Any months with more than 1 job	56.12	0.70	0.55	8,073	1.26	1.58
Any unemployment since graduation	38.95	0.71	0.53	8,407	1.33	1.77
Applied to grad school since last interview	17.02	0.53	0.41	8,405	1.28	1.64
Is single, never married	40.93	0.96	0.54	8,371	1.78	3.18
Taken the GRE	6.71	0.35	0.27	8,387	1.28	1.65
Very satisfied with job=s promotion opportunity	38.31	0.72	0.54	7,985	1.33	1.76
Very satisfied with job=s pay	33.29	0.65	0.52	8,099	1.24	1.53
SUMMARY STATISTICS						
Mean					1.40	1.99
Minimum					1.20	1.44
Maximum					2.03	4.12

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.11.--Design effects for respondents from 4-year public institutions - B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	17.38	0.66	0.47	6,586	1.40	1.97
Attended school since graduation	40.26	0.91	0.60	6,585	1.51	2.28
Received aid (of those attending school since BA)	53.58	1.55	1.12	1,986	1.39	1.92
Had prior related job experience	68.59	0.74	0.58	6,341	1.28	1.63
Employed since last interview	97.04	0.26	0.21	6,569	1.26	1.59
Degree is required for job	64.71	0.75	0.60	6,316	1.24	1.54
Received other similar job offers	38.83	0.89	0.64	5,827	1.39	1.94
Degree is closely related to job	55.39	0.82	0.62	6,344	1.32	1.74
Job has career potential	55.33	0.88	0.63	6,328	1.40	1.96
Job offers health insurance	84.15	0.55	0.46	6,341	1.21	1.46
Ever considered teaching	41.14	0.81	0.61	6,568	1.33	1.77
Received training from employer (last 12 mos.)	45.36	0.75	0.63	6,324	1.20	1.44
Has done volunteer work	41.06	0.80	0.61	6,558	1.31	1.73
Voted in 1996 presidential election	76.01	0.73	0.53	6,561	1.39	1.92
Speaks a foreign language	66.12	1.02	0.58	6,561	1.75	3.05
Has children	27.88	1.08	0.55	6,586	1.95	3.81
Is saving money	69.11	0.85	0.57	6,539	1.49	2.22
Has educational loans	46.26	0.98	0.62	6,524	1.58	2.50
Owens home	43.24	1.06	0.61	6,542	1.73	3.00
Owens car	90.90	0.51	0.36	6,539	1.44	2.08
Has non-educational debt	53.34	0.86	0.62	6,504	1.39	1.94
Has graduate loan(s)	11.76	0.58	0.40	6,524	1.45	2.09
Disabilities interfere with work	1.99	0.20	0.17	6,556	1.18	1.40
Any months with more than 1 job	56.48	0.78	0.62	6,303	1.25	1.56
Any unemployment since graduation	40.07	0.79	0.60	6,588	1.31	1.70
Applied to grad school since last interview	16.70	0.60	0.46	6,586	1.30	1.69
Is single, never married	40.83	1.07	0.61	6,552	1.76	3.09
Taken the GRE	6.95	0.43	0.31	6,576	1.38	1.91
Very satisfied with job=s promotion opportunity	38.16	0.80	0.61	6,259	1.30	1.69
Very satisfied with job=s pay	32.26	0.73	0.59	6,336	1.23	1.52
SUMMARY STATISTICS						
Mean					1.40	2.01
Minimum					1.18	1.40
Maximum					1.95	3.81

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.12.--Design effects for respondents from 4-year private institutions- B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	18.31	0.84	0.65	3,501	1.29	1.65
Attended school since graduation	42.13	1.27	0.83	3,504	1.53	2.33
Received aid (of those attending school since BA)	59.01	1.97	1.39	1,253	1.41	2.00
Had prior related job experience	67.64	1.11	0.81	3,318	1.37	1.88
Employed since last interview	96.08	0.46	0.33	3,490	1.39	1.94
Degree is required for job	57.59	1.28	0.86	3,298	1.48	2.19
Received other similar job offers	34.52	1.12	0.86	3,054	1.30	1.69
Degree is closely related to job	52.70	1.30	0.87	3,323	1.50	2.25
Job has career potential	53.19	1.27	0.87	3,316	1.46	2.14
Job offers health insurance	81.41	0.91	0.68	3,318	1.34	1.79
Ever considered teaching	42.69	1.30	0.84	3,490	1.55	2.39
Received training from employer (last 12 mos.)	40.59	1.24	0.85	3,310	1.45	2.10
Has done volunteer work	45.84	1.31	0.84	3,493	1.55	2.40
Voted in 1996 presidential election	74.16	1.24	0.74	3,490	1.67	2.80
Speaks a foreign language	61.11	1.43	0.83	3,492	1.73	3.01
Has children	30.48	1.96	0.78	3,503	2.52	6.33
Is saving money	66.02	1.20	0.80	3,477	1.50	2.24
Has educational loans	54.38	1.35	0.85	3,463	1.59	2.54
Owens home	37.94	1.85	0.82	3,484	2.25	5.07
Owens car	86.44	1.15	0.58	3,479	1.99	3.95
Has non-educational debt	49.54	1.32	0.85	3,458	1.56	2.42
Has graduate loan(s)	13.75	0.83	0.59	3,458	1.41	1.99
Disabilities interfere with work	1.90	0.28	0.23	3,493	1.22	1.50
Any months with more than 1 job	53.77	1.26	0.86	3,324	1.46	2.14
Any unemployment since graduation	38.25	1.23	0.82	3,505	1.49	2.23
Applied to grad school since last interview	19.61	0.95	0.67	3,504	1.41	2.00
Is single, never married	45.75	1.75	0.84	3,488	2.08	4.32
Taken the GRE	6.66	0.55	0.42	3,496	1.31	1.71
Very satisfied with job=s promotion opportunity	35.94	1.11	0.84	3,255	1.32	1.75
Very satisfied with job=s pay	32.21	1.11	0.81	3,316	1.37	1.87
SUMMARY STATISTICS						
Mean					1.55	2.49
Minimum					1.22	1.50
Maximum					2.52	6.33

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.13.--Design effects for all panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	16.69	0.52	0.39	9,270	1.35	1.82
Attended school since graduation	40.51	0.76	0.51	9,270	1.50	2.25
Received aid (of those attending school since BA)	55.93	1.26	0.91	2,983	1.38	1.91
Had prior related job experience	68.34	0.64	0.49	8,870	1.29	1.67
Employed since last interview	96.60	0.24	0.19	9,247	1.28	1.65
Degree is required for job	62.18	0.68	0.52	8,830	1.32	1.74
Received other similar job offers	37.07	0.72	0.53	8,152	1.35	1.83
Degree is closely related to job	54.56	0.71	0.53	8,878	1.35	1.82
Job has career potential	54.51	0.74	0.53	8,858	1.39	1.93
Job offers health insurance	83.49	0.49	0.39	8,872	1.24	1.54
Ever considered teaching	42.07	0.72	0.51	9,245	1.39	1.94
Received training from employer (last 12 mos.)	43.82	0.68	0.53	8,847	1.29	1.68
Has done volunteer work	42.78	0.71	0.51	9,245	1.38	1.91
Voted in 1996 presidential election	75.71	0.67	0.45	9,246	1.49	2.23
Speaks a foreign language	64.89	0.83	0.50	9,249	1.67	2.78
Has children	28.94	1.00	0.47	9,270	2.12	4.49
Is saving money	68.07	0.73	0.49	9,221	1.49	2.23
Has educational loans	49.73	0.82	0.52	9,223	1.57	2.48
Owens home	41.28	0.95	0.51	9,227	1.86	3.45
Owens car	89.44	0.53	0.32	9,221	1.64	2.69
Has non-educational debt	52.43	0.73	0.52	9,168	1.41	1.98
Has graduate loan(s)	12.60	0.49	0.35	9,184	1.41	2.00
Disabilities interfere with work	2.05	0.18	0.15	9,247	1.20	1.44
Any months with more than 1 job	56.44	0.70	0.53	8,831	1.32	1.75
Any unemployment since graduation	39.83	0.70	0.51	9,274	1.37	1.88
Applied to grad school since last interview	16.24	0.50	0.38	9,271	1.32	1.73
Is single, never married	42.55	0.95	0.51	9,243	1.84	3.39
Taken the GRE	6.15	0.32	0.25	9,253	1.29	1.65
Very satisfied with job=s promotion opportunity	37.17	0.67	0.52	8,740	1.30	1.69
Very satisfied with job=s pay	32.37	0.64	0.50	8,865	1.29	1.65
SUMMARY STATISTICS						
Mean					1.44	2.11
Minimum					1.20	1.44
Maximum					2.12	4.49

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.14.--Design effects for female panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	15.73	0.65	0.50	5,253	1.29	1.66
Attended school since graduation	42.05	0.92	0.68	5,251	1.36	1.84
Received aid (of those attending school since BA)	52.11	1.69	1.22	1,670	1.38	1.92
Had prior related job experience	68.55	0.83	0.65	5,031	1.27	1.60
Employed since last interview	96.57	0.32	0.25	5,236	1.28	1.65
Degree is required for job	63.92	0.91	0.68	5,011	1.33	1.78
Received other similar job offers	38.18	0.95	0.71	4,634	1.32	1.75
Degree is closely related to job	58.21	0.91	0.70	5,036	1.31	1.71
Job has career potential	51.68	0.90	0.71	5,023	1.28	1.63
Job offers health insurance	82.19	0.63	0.54	5,032	1.18	1.38
Ever considered teaching	49.00	0.93	0.69	5,240	1.35	1.82
Received training from employer (last 12 mos.)	44.75	0.87	0.70	5,015	1.24	1.54
Has done volunteer work	44.61	0.89	0.69	5,241	1.29	1.67
Voted in 1996 presidential election	77.55	0.82	0.58	5,238	1.42	2.01
Speaks a foreign language	64.89	1.01	0.66	5,242	1.53	2.33
Has children	32.29	1.16	0.65	5,251	1.80	3.25
Is saving money	67.06	0.90	0.65	5,226	1.39	1.92
Has educational loans	49.39	1.02	0.69	5,226	1.47	2.16
Owens home	43.73	1.17	0.69	5,228	1.70	2.90
Owens car	89.54	0.64	0.42	5,223	1.50	2.26
Has non-educational debt	55.20	0.90	0.69	5,193	1.31	1.71
Has graduate loan(s)	12.58	0.60	0.46	5,205	1.30	1.70
Disabilities interfere with work	2.08	0.21	0.20	5,240	1.06	1.13
Any months with more than 1 job	57.02	0.92	0.70	5,002	1.32	1.73
Any unemployment since graduation	39.39	0.86	0.67	5,254	1.27	1.62
Applied to grad school since last interview	17.20	0.65	0.52	5,251	1.24	1.53
Is single, never married	38.78	1.14	0.67	5,239	1.69	2.85
Taken the GRE	6.73	0.43	0.35	5,242	1.23	1.51
Very satisfied with job=s promotion opportunity	34.66	0.87	0.68	4,949	1.29	1.66
Very satisfied with job=s pay	31.69	0.83	0.66	5,027	1.26	1.58
SUMMARY STATISTICS						
Mean					1.36	1.86
Minimum					1.06	1.13
Maximum					1.80	3.25

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.15.--Design effects for male panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent estimate	Design SE SRS-SE		N	DEFT	DEFF
Took state/professional licensing exams	17.85	0.82	0.60	4,017	1.36	1.84
Attended school since graduation	38.64	1.09	0.77	4,019	1.42	2.01
Received aid (of those attending school since BA)	60.55	1.73	1.35	1,313	1.28	1.65
Had prior related job experience	68.09	0.95	0.75	3,839	1.26	1.58
Employed since last interview	96.64	0.34	0.28	4,011	1.20	1.43
Degree is required for job	60.09	1.05	0.79	3,819	1.33	1.77
Received other similar job offers	35.73	1.07	0.81	3,518	1.33	1.76
Degree is closely related to job	50.17	1.09	0.81	3,842	1.35	1.82
Job has career potential	57.90	1.12	0.80	3,835	1.41	1.98
Job offers health insurance	85.04	0.71	0.58	3,840	1.24	1.53
Ever considered teaching	33.71	0.99	0.75	4,005	1.33	1.76
Received training from employer (last 12 mos.)	42.69	1.01	0.80	3,832	1.27	1.60
Has done volunteer work	40.57	1.05	0.78	4,004	1.36	1.84
Voted in 1996 presidential election	73.49	1.02	0.70	4,008	1.46	2.14
Speaks a foreign language	64.88	1.12	0.75	4,007	1.48	2.19
Has children	24.91	1.24	0.68	4,019	1.82	3.30
Is saving money	69.28	1.05	0.73	3,995	1.44	2.08
Has educational loans	50.14	1.09	0.79	3,997	1.38	1.91
Owens home	38.33	1.24	0.77	3,999	1.62	2.62
Owens car	89.31	0.69	0.49	3,998	1.42	2.01
Has non-educational debt	49.09	1.13	0.79	3,975	1.42	2.02
Has graduate loan(s)	12.63	0.70	0.53	3,979	1.33	1.77
Disabilities interfere with work	2.01	0.28	0.22	4,007	1.27	1.60
Any months with more than 1 job	55.76	1.09	0.80	3,829	1.36	1.86
Any unemployment since graduation	40.36	1.06	0.77	4,020	1.37	1.89
Applied to grad school since last interview	15.08	0.69	0.56	4,020	1.22	1.49
Is single, never married	47.10	1.24	0.79	4,004	1.57	2.46
Taken the GRE	5.45	0.45	0.36	4,011	1.25	1.56
Very satisfied with job=s promotion opportunity	40.17	1.04	0.80	3,791	1.30	1.70
Very satisfied with job=s pay	33.20	1.02	0.76	3,838	1.34	1.78
 SUMMARY STATISTICS						
Mean					1.37	1.90
Minimum					1.20	1.43
Maximum					1.82	3.30

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.16.--Design effects for black panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent estimate	Design		N	DEFT	DEFF
		SE	SRS-SE			
Took state/professional licensing exams	13.57	1.73	1.45	555	1.19	1.41
Attended school since graduation	39.28	2.52	2.07	555	1.21	1.48
Received aid (of those attending school since BA)	63.68	4.83	3.47	193	1.39	1.93
Had prior related job experience	70.60	2.59	1.99	526	1.30	1.70
Employed since last interview	97.68	0.55	0.64	549	0.85	0.72
Degree is required for job	58.17	2.88	2.16	524	1.33	1.78
Received other similar job offers	35.58	2.50	2.15	496	1.16	1.35
Degree is closely related to job	49.51	2.83	2.18	527	1.30	1.69
Job has career potential	46.05	2.92	2.18	526	1.34	1.80
Job offers health insurance	88.52	1.42	1.39	527	1.02	1.04
Ever considered teaching	53.14	3.02	2.12	554	1.42	2.03
Received training from employer (last 12 mos.)	42.67	2.81	2.15	528	1.31	1.70
Has done volunteer work	48.18	2.80	2.13	553	1.32	1.73
Voted in 1996 presidential election	82.11	2.13	1.63	554	1.31	1.71
Speaks a foreign language	68.16	2.68	1.98	554	1.35	1.83
Has children	42.01	2.66	2.10	554	1.26	1.60
Is saving money	66.81	2.38	2.01	551	1.18	1.40
Has educational loans	64.25	2.97	2.04	553	1.45	2.11
Owens home	28.26	2.83	1.92	553	1.48	2.18
Owens car	81.84	2.50	1.64	552	1.52	2.32
Has non-educational debt	61.35	2.64	2.09	545	1.26	1.60
Has graduate loan(s)	15.99	1.95	1.57	545	1.24	1.54
Disabilities interfere with work	1.27	0.38	0.48	553	0.80	0.65
Any months with more than 1 job	59.03	2.88	2.18	510	1.32	1.74
Any unemployment since graduation	45.06	2.75	2.11	555	1.30	1.69
Applied to grad school since last interview	20.48	2.38	1.71	555	1.39	1.93
Is single, never married	54.28	2.95	2.12	554	1.39	1.94
Taken the GRE	5.98	0.99	1.01	554	0.98	0.96
Very satisfied with job=s promotion opportunity	29.96	2.45	2.02	517	1.21	1.48
Very satisfied with job=s pay	24.03	2.14	1.86	526	1.15	1.32
SUMMARY STATISTICS						
Mean					1.26	1.61
Minimum					0.80	0.65
Maximum					1.52	2.32

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.17.--Design effects for Asian panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent estimate	Design		N	DEFT	DEFF
		SE	SRS-SE			
Took state/professional licensing exams	17.38	2.55	1.97	371	1.30	1.68
Attended school since graduation	49.97	4.28	2.60	372	1.65	2.72
Received aid (of those attending school since BA)	58.95	5.48	4.17	140	1.31	1.73
Had prior related job experience	68.79	3.73	2.56	328	1.45	2.11
Employed since last interview	91.94	1.79	1.42	367	1.25	1.57
Degree is required for job	61.94	5.32	2.69	328	1.98	3.93
Received other similar job offers	27.93	3.55	2.53	315	1.40	1.96
Degree is closely related to job	48.55	4.54	2.77	327	1.64	2.69
Job has career potential	51.85	4.99	2.78	325	1.80	3.23
Job offers health insurance	86.61	2.30	1.88	328	1.22	1.49
Ever considered teaching	20.26	2.69	2.09	370	1.29	1.65
Received training from employer (last 12 mos.)	49.75	4.86	2.78	325	1.75	3.06
Has done volunteer work	41.69	4.68	2.57	369	1.82	3.31
Voted in 1996 presidential election	44.53	4.32	2.60	367	1.66	2.76
Speaks a foreign language	24.20	4.47	2.23	369	2.00	4.02
Has children	19.36	5.52	2.05	372	2.69	7.23
Is saving money	54.39	4.51	2.60	367	1.73	3.00
Has educational loans	43.82	4.77	2.59	368	1.84	3.39
Owens home	25.50	3.35	2.28	366	1.47	2.15
Owens car	76.69	3.34	2.21	367	1.51	2.28
Has non-educational debt	44.18	4.76	2.61	364	1.82	3.33
Has graduate loan(s)	11.91	1.96	1.70	364	1.15	1.33
Disabilities interfere with work	2.28	0.99	0.78	369	1.27	1.61
Any months with more than 1 job	49.40	4.74	2.72	338	1.74	3.03
Any unemployment since graduation	42.76	3.93	2.57	372	1.53	2.34
Applied to grad school since last interview	16.00	2.09	1.91	371	1.10	1.21
Is single, never married	59.36	4.79	2.56	368	1.87	3.49
Taken the GRE	6.77	1.52	1.30	372	1.17	1.36
Very satisfied with job=s promotion opportunity	29.38	4.29	2.54	322	1.69	2.85
Very satisfied with job=s pay	24.92	3.75	2.40	327	1.57	2.45
SUMMARY STATISTICS						
Mean					1.59	2.63
Minimum					1.10	1.21
Maximum					2.69	7.23

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.18.--Design effects for Hispanic panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent estimate	Design		N	DEFT	DEFF
		SE	SRS-SE			
Took state/professional licensing exams	21.36	2.44	1.88	476	1.30	1.68
Attended school since graduation	44.53	2.78	2.28	477	1.22	1.49
Received aid (of those attending school since BA)	53.99	5.61	3.99	157	1.41	1.98
Had prior related job experience	66.93	2.63	2.25	439	1.17	1.37
Employed since last interview	93.32	1.34	1.15	476	1.17	1.36
Degree is required for job	60.71	3.01	2.34	437	1.29	1.66
Received other similar job offers	37.73	3.26	2.43	398	1.34	1.80
Degree is closely related to job	56.82	2.87	2.36	440	1.21	1.47
Job has career potential	50.48	3.16	2.39	440	1.32	1.75
Job offers health insurance	79.46	2.20	1.93	439	1.14	1.30
Ever considered teaching	48.48	3.04	2.30	473	1.32	1.75
Received training from employer (last 12 mos.)	39.61	2.92	2.34	437	1.25	1.55
Has done volunteer work	34.21	2.80	2.18	474	1.28	1.65
Voted in 1996 presidential election	63.60	3.21	2.21	475	1.45	2.11
Speaks a foreign language	21.46	2.65	1.88	476	1.41	1.98
Has children	35.88	3.44	2.20	476	1.56	2.44
Is saving money	64.99	3.22	2.19	475	1.47	2.16
Has educational loans	59.72	3.17	2.25	476	1.41	1.98
Owens home	41.88	3.21	2.26	476	1.42	2.01
Owens car	85.72	2.28	1.61	475	1.42	2.01
Has non-educational debt	65.29	2.50	2.19	475	1.14	1.31
Has graduate loan(s)	16.44	2.42	1.70	475	1.42	2.02
Disabilities interfere with work	3.03	1.05	0.79	476	1.34	1.79
Any months with more than 1 job	51.77	3.06	2.38	443	1.29	1.66
Any unemployment since graduation	42.01	3.02	2.26	477	1.34	1.78
Applied to grad school since last interview	14.50	2.02	1.61	477	1.25	1.57
Is single, never married	41.62	3.07	2.26	476	1.36	1.84
Taken the GRE	6.30	1.52	1.11	477	1.36	1.85
Very satisfied with job=s promotion opportunity	38.83	2.95	2.34	434	1.26	1.59
Very satisfied with job=s pay	31.57	2.82	2.22	438	1.27	1.60
SUMMARY STATISTICS						
Mean					1.32	1.75
Minimum					1.14	1.30
Maximum					1.56	2.44

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond: 93/97*.

Table 7.19.--Design effects for white panel respondents - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent estimate	Design SE	SRS-SE	N	DEFT	DEFF
Took state/professional licensing exams	16.50	0.56	0.42	7,749	1.32	1.75
Attended school since graduation	39.85	0.78	0.56	7,747	1.41	1.98
Received aid (of those attending school since BA)	55.42	1.36	1.00	2,455	1.36	1.85
Had prior related job experience	68.13	0.68	0.54	7,468	1.26	1.59
Employed since last interview	97.01	0.25	0.19	7,737	1.29	1.65
Degree is required for job	62.62	0.71	0.56	7,432	1.26	1.59
Received other similar job offers	37.64	0.78	0.59	6,845	1.32	1.75
Degree is closely related to job	55.22	0.75	0.58	7,474	1.30	1.68
Job has career potential	55.55	0.77	0.58	7,458	1.33	1.78
Job offers health insurance	83.25	0.53	0.43	7,470	1.23	1.51
Ever considered teaching	41.86	0.76	0.56	7,729	1.35	1.83
Received training from employer (last 12 mos.)	43.93	0.72	0.58	7,449	1.26	1.58
Has done volunteer work	42.77	0.74	0.56	7,732	1.31	1.71
Voted in 1996 presidential election	77.66	0.67	0.47	7,732	1.41	1.98
Speaks a foreign language	69.75	0.73	0.52	7,733	1.39	1.94
Has children	27.92	1.01	0.51	7,750	1.98	3.90
Is saving money	69.19	0.74	0.53	7,710	1.41	1.98
Has educational loans	48.29	0.89	0.57	7,708	1.57	2.45
Owens home	43.09	1.01	0.56	7,717	1.78	3.18
Owens car	90.99	0.49	0.33	7,711	1.51	2.29
Has non-educational debt	51.40	0.78	0.57	7,668	1.37	1.88
Has graduate loan(s)	12.15	0.49	0.37	7,682	1.31	1.73
Disabilities interfere with work	1.94	0.19	0.16	7,731	1.21	1.45
Any months with more than 1 job	56.90	0.72	0.57	7,433	1.26	1.59
Any unemployment since graduation	39.23	0.74	0.55	7,751	1.34	1.79
Applied to grad school since last interview	15.97	0.52	0.42	7,749	1.25	1.57
Is single, never married	40.91	0.99	0.56	7,727	1.77	3.12
Taken the GRE	6.06	0.33	0.27	7,731	1.23	1.51
Very satisfied with job=s promotion opportunity	38.07	0.74	0.57	7,360	1.31	1.72
Very satisfied with job=s pay	33.33	0.68	0.55	7,465	1.25	1.56
 SUMMARY STATISTICS						
Mean					1.38	1.93
Minimum					1.21	1.45
Maximum					1.98	3.90

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.20.--Design effects for panel respondents from 4-year public institutions - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	16.71	0.67	0.48	6,071	1.39	1.94
Attended school since graduation	40.19	0.94	0.63	6,068	1.49	2.23
Received aid (of those attending school since BA)	53.47	1.61	1.16	1,839	1.39	1.92
Had prior related job experience	68.81	0.77	0.61	5,838	1.27	1.61
Employed since last interview	96.95	0.27	0.22	6,055	1.21	1.46
Degree is required for job	64.70	0.77	0.63	5,816	1.23	1.51
Received other similar job offers	38.54	0.91	0.66	5,361	1.37	1.87
Degree is closely related to job	55.50	0.84	0.65	5,841	1.29	1.66
Job has career potential	55.29	0.88	0.65	5,827	1.35	1.82
Job offers health insurance	84.31	0.58	0.48	5,839	1.21	1.46
Ever considered teaching	41.50	0.84	0.63	6,054	1.32	1.75
Received training from employer (last 12 mos.)	45.17	0.80	0.65	5,822	1.23	1.51
Has done volunteer work	41.18	0.82	0.63	6,049	1.30	1.69
Voted in 1996 presidential election	76.25	0.77	0.55	6,052	1.41	1.99
Speaks a foreign language	66.50	1.02	0.61	6,054	1.67	2.80
Has children	27.96	1.10	0.58	6,069	1.91	3.65
Is saving money	68.95	0.88	0.60	6,038	1.47	2.16
Has educational loans	46.95	0.99	0.64	6,050	1.55	2.40
Owns home	43.00	1.09	0.64	6,038	1.71	2.94
Owns car	90.89	0.55	0.37	6,037	1.49	2.23
Has non-educational debt	53.61	0.88	0.64	6,005	1.37	1.87
Has graduate loan(s)	11.89	0.60	0.42	6,019	1.43	2.05
Disabilities interfere with work	2.09	0.22	0.18	6,050	1.17	1.37
Any months with more than 1 job	57.22	0.80	0.65	5,799	1.23	1.50
Any unemployment since graduation	40.49	0.83	0.63	6,071	1.32	1.75
Applied to grad school since last interview	15.52	0.61	0.46	6,069	1.30	1.70
Is single, never married	40.88	1.09	0.63	6,049	1.73	2.99
Taken the GRE	6.33	0.41	0.31	6,059	1.32	1.75
Very satisfied with job=s promotion opportunity	38.00	0.83	0.64	5,765	1.30	1.68
Very satisfied with job=s pay	32.52	0.75	0.61	5,834	1.23	1.51
SUMMARY STATISTICS						
Mean					1.39	1.96
Minimum					1.17	1.37
Maximum					1.91	3.65

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.21.--Design effects for respondents from 4-year private institutions - NPSAS:93, B&B:93/94, and B&B:93/97

Variables	Percent Design			N	DEFT	DEFF
	estimate	SE	SRS-SE			
Took state/professional licensing exams	16.64	0.83	0.66	3,199	1.26	1.58
Attended school since graduation	41.15	1.31	0.87	3,202	1.50	2.26
Received aid (of those attending school since BA)	60.31	1.95	1.45	1,144	1.34	1.81
Had prior related job experience	67.38	1.15	0.85	3,032	1.35	1.81
Employed since last interview	95.90	0.49	0.35	3,192	1.40	1.95
Degree is required for job	57.05	1.30	0.90	3,014	1.44	2.07
Received other similar job offers	34.08	1.15	0.90	2,791	1.29	1.65
Degree is closely related to job	52.64	1.33	0.91	3,037	1.47	2.16
Job has career potential	52.92	1.33	0.91	3,031	1.47	2.15
Job offers health insurance	81.81	0.91	0.70	3,033	1.30	1.70
Ever considered teaching	43.20	1.34	0.88	3,191	1.53	2.33
Received training from employer (last 12 mos.)	41.06	1.27	0.89	3,025	1.42	2.02
Has done volunteer work	45.99	1.34	0.88	3,196	1.51	2.29
Voted in 1996 presidential election	74.63	1.27	0.77	3,194	1.65	2.71
Speaks a foreign language	61.64	1.42	0.86	3,195	1.65	2.74
Has children	30.93	2.00	0.82	3,201	2.45	6.01
Is saving money	66.29	1.29	0.84	3,183	1.54	2.36
Has educational loans	55.36	1.41	0.88	3,173	1.60	2.56
Owns home	37.84	1.86	0.86	3,189	2.16	4.67
Owns car	86.53	1.15	0.61	3,184	1.90	3.62
Has non-educational debt	50.05	1.34	0.89	3,163	1.50	2.26
Has graduate loan(s)	14.03	0.86	0.62	3,165	1.39	1.94
Disabilities interfere with work	1.97	0.31	0.25	3,197	1.26	1.59
Any months with more than 1 job	54.87	1.36	0.90	3,032	1.50	2.25
Any unemployment since graduation	38.51	1.26	0.86	3,203	1.46	2.14
Applied to grad school since last interview	17.68	0.91	0.67	3,202	1.35	1.82
Is single, never married	45.92	1.82	0.88	3,194	2.07	4.28
Taken the GRE	5.76	0.49	0.41	3,194	1.18	1.40
Very satisfied with job=s promotion opportunity	35.47	1.15	0.88	2,975	1.31	1.72
Very satisfied with job=s pay	32.08	1.19	0.85	3,031	1.40	1.96
SUMMARY STATISTICS						
Mean					1.52	2.39
Minimum					1.18	1.40
Maximum					2.45	6.01

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Finally, table 7.22 below compares the three sets of B&B design effects by comparing the means, minimums, and maximum design effects (DEFFs) and root design effects (DEFTs) for B&B:93/94, B&B:93/97, and the panel (respondents to all three of NPSAS:93, B&B:93/94, and B&B:93/97). These comparisons are made for the overall population, as well as the eight subgroups for which design effects were calculated. The panel respondents tend to have the lowest design effects, while the mean design effects tend to be highest for B&B:93/94. These are only slight differences, however, since the three sets of design effects are very similar.

Table 7.22.--Comparison of summary statistics of B&B design effects

Group	Mean		Min		Max	
	DEFT	DEFF	DEFT	DEFF	DEFT	DEFF
Overall						
B&B:93/94	1.48	2.26	1.23	1.51	2.07	4.30
B&B:93/97	1.46	2.17	1.19	1.42	2.17	4.69
PANEL2	1.44	2.11	1.20	1.44	2.12	4.49
Female						
B&B:93/94	1.40	2.01	1.08	1.16	2.01	4.02
B&B:93/97	1.37	1.91	1.06	1.13	1.82	3.32
PANEL2	1.36	1.86	1.06	1.13	1.80	3.25
Male						
B&B:93/94	1.43	2.07	1.14	1.29	2.04	4.16
B&B:93/97	1.39	1.94	1.22	1.49	1.83	3.35
PANEL2	1.37	1.90	1.20	1.43	1.82	3.30
Black						
B&B:93/94	1.29	1.68	1.04	1.08	1.62	2.63
B&B:93/97	1.27	1.64	0.81	0.66	1.54	2.39
PANEL2	1.26	1.61	0.80	0.65	1.52	2.32
Asian						
B&B:93/94	1.63	2.78	1.06	1.12	2.33	5.66
B&B:93/97	1.60	2.66	1.13	1.27	2.71	7.33
PANEL2	1.59	2.63	1.10	1.21	2.69	7.23
Hispanic						
B&B:93/94	1.35	1.85	1.10	1.22	1.60	2.55
B&B:93/97	1.36	1.85	1.14	1.31	1.65	2.72
PANEL2	1.32	1.75	1.14	1.30	1.56	2.44
White						
B&B:93/94	1.46	2.20	1.18	1.40	2.45	5.99
B&B:93/97	1.40	1.99	1.20	1.44	2.03	4.12
PANEL2	1.38	1.93	1.21	1.45	1.98	3.90
Public						
B&B:93/94	1.43	2.14	1.16	1.34	2.64	6.97
B&B:93/97	1.40	2.01	1.18	1.40	1.95	3.81
PANEL2	1.39	1.96	1.17	1.37	1.91	3.65
Private						
B&B:93/94	1.52	2.60	0.94	0.88	3.58	6.68
B&B:93/97	1.55	2.49	1.22	1.50	2.52	6.33
PANEL2	1.52	2.39	1.18	1.40	2.45	6.01

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond: 93/97*.

7.3 Nonresponse Bias Analysis

To assess whether there are differences between groups in the frequency of refusing to answer particular questions, a subset of variables used in the examination of design effects was used in a nonresponse bias analysis. The selected variables are typical of the items found in the data file and are characterized by an overall low rate of nonresponse since this was a computer-assisted interview. Only variables that correspond to direct questions asked of respondents are analyzed here; variables that are constructed or derived are excluded from this analysis.

A case is classified as “valid” if the respondent provided an answer; a case is classified as “missing” if the respondent refused or said he or she didn’t know. Percentages are based on the total number of cases to which the question applied.

Three sets of comparisons are presented, analyzing nonresponse based on gender, date of interview, and race/ethnicity. The results are shown in tables 7.23 through 7.25 below. The tables present the distribution of valid responses among subgroups, the distribution of missing responses among subgroups, and the standard errors of the proportions are shown in parentheses. T-tests between the percent valid and the percent missing for each subgroup were conducted and significant differences are denoted in *bold italics*.

No significant differences based on gender are evident. Males and females have approximately equal levels of missing data on the items included in this analysis.

Significant differences based on date of interview are present for 21 of the 25 variables examined. Cases that were completed during the first three months of data collection have a higher proportion of valid than missing responses to twenty-one items. Differences between the percent valid and missing are also present for cases completed between July and September (significant differences are present for 12 of 25 variables), and those complete from October through December (significant differences are present 14 of 25 variables).

Note that the April-June period coincides with the CATI data collection period. Cases that were completed during the July-December CAPI field period had higher levels of missing data than those completed during the telephone interviewing period. While it is possible that this represents a mode effect, it seems likely that it is the result of the fact that difficult cases were completed during the CAPI field period, including respondents who had refused to complete an interview over the phone.

The analysis based on race and ethnicity also shows some small level of nonresponse bias. In conducting t-tests between the percent valid and percent missing among white respondents, 13 of the 25 comparisons are significant. For all of these items, whites had high levels of valid data in comparison to missing data. Missing responses seem to be distributed more heavily among non-white than white cases.

Again, it should be repeated that the overall level of nonresponse is very low in this data file. The use of CATI and CAPI technology eliminates the respondent error due to incorrect branching that is often found in self-administered questionnaires, and also provides the opportunity for prompting respondents who are initially reluctant to answer a question. The response bias noted here is not sufficiently grave to have a major impact on most analysis. However, it is important to note so that improvements might be made for the next round of data collection.

Table 7.23.--Respondents with “valid” or “missing” responses, by gender

Variable	Total	Male	Female
Took state/professional licensing exams			
Percent valid	99.95	45.13	54.87
(SE)	(0.02)	(0.79)	(0.79)
Percent missing	0.05	65.70	34.30
(SE)	(0.02)	(20.36)	(20.36)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Prior related job experience			
Percent valid	99.71	45.19	54.81
(SE)	(0.07)	(0.79)	(0.79)
Percent missing	0.29	44.42	55.58
(SE)	(0.07)	(10.94)	(10.94)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Degree required for job			
Percent valid	99.19	45.19	54.81
(SE)	(0.12)	(0.79)	(0.79)
Percent missing	0.81	45.36	54.64
(SE)	(0.12)	(7.44)	(7.44)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Received other similar job offers			
Percent valid	99.43	44.69	55.31
(SE)	(0.11)	(0.80)	(0.80)
Percent missing	0.57	47.76	52.24
(SE)	(0.11)	(9.38)	(9.38)
Percent valid & missing	100.00	44.71	55.29
(SE)		(0.80)	(0.80)
Degree related to job			
Percent valid	99.76	45.18	54.82
(SE)	(0.06)	(0.79)	(0.79)
Percent missing	0.24	49.73	50.27
(SE)	(0.06)	(13.38)	(13.38)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)

Table 7.23.--Respondents with “valid” or “missing” responses, by gender--Continued

Variable	Total	Male	Female
Job has potential			
Percent valid	99.61	45.20	54.80
(SE)	(0.08)	(0.80)	(0.80)
Percent missing	0.39	41.73	58.27
(SE)	(0.08)	(7.37)	(7.37)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Job offers health insurance			
Percent valid	99.70	45.20	54.80
(SE)	(0.06)	(0.80)	(0.80)
Percent missing	0.30	40.89	59.11
(SE)	(0.06)	(10.08)	(10.08)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Ever considered teaching			
Percent valid	99.52	50.85	49.15
(SE)	(0.11)	(0.96)	(0.96)
Percent missing	0.48	47.33	52.67
(SE)	(0.11)	(11.34)	(11.34)
Percent valid & missing	100.00	50.84	49.16
(SE)		(0.96)	(0.96)
Training received from employer (last 12 months)			
Percent valid	99.17	45.29	54.71
(SE)	(0.12)	(0.80)	(0.80)
Percent missing	0.83	33.85	66.15
(SE)	(0.12)	(6.85)	(6.85)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Volunteer work			
Percent valid	99.59	45.07	45.93
(SE)	(0.08)	(0.79)	(0.79)
Percent missing	0.41	60.37	39.63
(SE)	(0.08)	(9.26)	(9.26)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)

Table 7.23.--Respondents with “valid” or “missing” responses, by gender--Continued

Variable	Total	Male	Female
Voted in 1996 presidential election			
Percent valid	99.60	45.12	54.88
(SE)	(0.08)	(0.79)	(0.79)
Percent missing	0.40	50.44	49.56
(SE)	(0.08)	(9.78)	(9.78)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Speaks a foreign language			
Percent valid	99.62	45.12	54.88
(SE)	(0.08)	(0.79)	(0.79)
Percent missing	0.38	50.67	49.33
(SE)	(0.08)	(9.77)	(9.77)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Any children			
Percent valid	99.74	39.08	60.92
(SE)	(0.19)	(1.40)	(1.40)
Percent missing	0.26	17.31	82.69
(SE)	(0.19)	(18.64)	(18.64)
Percent valid & missing	100.00	39.03	60.97
(SE)		(1.40)	(1.40)
Saving money			
Percent valid	99.24	45.11	54.89
(SE)	(0.11)	(0.79)	(0.79)
Percent missing	0.76	48.50	51.50
(SE)	(0.11)	7.35	(7.35)
Percent valid & missing	100.00	(45.14)	54.86
(SE)		(0.79)	(0.79)
Any educational loans			
Percent valid	98.89	45.12	54.88
(SE)	(0.13)	(0.79)	(0.79)
Percent missing	1.11	46.40	53.60
(SE)	(0.13)	(5.89)	(5.89)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)

Table 7.23.--Respondents with “valid” or “missing” responses, by gender--Continued

Variable	Total	Male	Female
Home ownership			
Percent valid	99.33	45.07	54.93
(SE)	(0.10)	(0.79)	(0.79)
Percent missing	0.67	54.50	45.50
(SE)	(0.10)	(7.65)	(7.65)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Car ownership			
Percent valid	99.24	45.07	54.93
(SE)	(0.11)	(0.79)	(0.79)
Percent missing	0.79	53.55	46.45
(SE)	(0.11)	(7.16)	(7.16)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Any non-educational debt			
Percent valid	98.62	45.08	54.92
(SE)	(0.15)	(0.79)	(0.79)
Percent missing	1.38	49.23	50.77
(SE)	(0.15)	(5.80)	(5.80)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Any graduate loan(s)			
Percent valid	96.55	44.99	55.01
(SE)	(0.42)	(1.23)	(1.23)
Percent missing	3.45	45.35	54.65
(SE)	(0.42)	(6.66)	(6.66)
Percent valid & missing	100.00	45.01	54.99
(SE)		(1.21)	(1.21)
Disabilities interfering with work			
Percent valid	99.57	45.14	54.86
(SE)	(0.08)	(0.79)	(0.79)
Percent missing	0.43	43.75	56.25
(SE)	(0.08)	(9.62)	(9.62)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)

Table 7.23.--Respondents with “valid” or “missing” responses, by gender--Continued

Variable	Total	Male	Female
Applied to graduate school since last interview			
Percent valid	99.97	45.15	54.85
(SE)	(0.02)	(0.79)	(0.79)
Percent missing	0.03	0.00	100.00
(SE)	(0.02)	--	--
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Marital status			
Percent valid	99.42	45.07	54.93
(SE)	(0.10)	(0.79)	(0.79)
Percent missing	0.58	56.96	43.04
(SE)	(0.10)	(8.25)	(8.25)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Taken the GRE			
Percent valid	99.80	45.13	54.87
(SE)	(0.05)	(0.79)	(0.79)
Percent missing	0.20	45.99	54.01
(SE)	(0.05)	(13.29)	(13.29)
Percent valid & missing	100.00	45.14	54.86
(SE)		(0.79)	(0.79)
Satisfaction with job=s promotion opportunity			
Percent valid	98.43	45.28	54.72
(SE)	(0.14)	(0.80)	(0.80)
Percent missing	1.57	39.58	60.42
(SE)	(0.14)	(4.34)	(4.34)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)
Satisfaction with job=s pay			
Percent valid	99.65	45.21	54.79
(SE)	(0.07)	(0.80)	(0.80)
Percent missing	0.35	38.57	61.43
(SE)	(0.07)	(8.83)	(8.83)
Percent valid & missing	100.00	45.19	54.81
(SE)		(0.79)	(0.79)

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond: 93/97*.

Table 7.24.--Respondents with “valid” or “missing” responses, by interview date

Variable	Total	April-June	July-September	October-December
Took state/professional licensing exams				
Percent valid	99.95	65.86	22.98	11.16
(SE)	(0.02)	(0.61)	(0.53)	(0.49)
Percent missing	0.05	56.30	8.40	35.30
(SE)	(0.02)	(21.42)	(8.50)	(20.65)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Prior related job experience				
Percent valid	99.71	65.83	23.07	11.10
(SE)	(0.07)	(0.64)	(0.55)	(0.50)
Percent missing	0.29	17.76	41.64	40.60
(SE)	(0.07)	(7.02)	(11.23)	(11.27)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)
Degree required for job				
Percent valid	99.19	65.75	23.08	11.17
(SE)	(0.12)	(0.64)	(0.55)	(0.50)
Percent missing	0.81	57.77	29.52	12.71
(SE)	(0.12)	(7.26)	(6.93)	(4.44)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)
Received other similar job offers				
Percent valid	99.43	65.62	23.13	11.24
(SE)	(0.11)	(0.67)	(0.57)	(0.53)
Percent missing	0.57	21.17	43.42	35.41
(SE)	(0.11)	(6.69)	(9.81)	(8.69)
Percent valid & missing	100.00	65.37	23.25	11.38
(SE)		(0.67)	(0.56)	(0.53)
Degree related to job				
Percent valid	99.76	65.80	23.07	11.13
(SE)	(0.06)	(0.64)	(0.55)	(0.50)
Percent missing	0.24	20.28	48.80	30.92
(SE)	(0.06)	(8.62)	(13.66)	(12.11)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)

Table 7.24.--Respondents with “valid” or “missing” responses, by interview date--Continued

Variable	Total	April-June	July-September	October-December
Job has potential				
Percent valid	99.61	65.82	23.10	11.08
(SE)	(0.08)	(0.64)	(0.55)	(0.50)
Percent missing	0.39	31.94	29.61	38.46
(SE)	(0.08)	(6.93)	(8.94)	(7.24)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)
Job offers health insurance				
Percent valid	99.70	65.80	23.09	11.11
(SE)	(0.06)	(0.64)	(0.55)	(0.50)
Percent missing	0.30	28.27	36.33	35.40
(SE)	(0.06)	(8.89)	(10.44)	(10.71)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)
Ever considered teaching				
Percent valid	99.52	63.70	24.69	11.61
(SE)	(0.11)	(0.81)	(0.70)	(0.64)
Percent missing	0.48	48.69	33.52	17.79
(SE)	(0.11)	(11.32)	(11.91)	(6.66)
Percent valid & missing	100.00	63.63	24.73	11.64
(SE)		(0.80)	(0.70)	(0.63)
Training received from employer (last 12 months)				
Percent valid	99.17	65.91	23.10	10.98
(SE)	(0.12)	(0.64)	(0.55)	(0.49)
Percent missing	0.83	25.91	19.83	54.26
(SE)	(0.12)	(5.99)	(5.98)	(7.55)
Percent valid & missing	100.00	65.58	23.08	11.34
(SE)		(0.64)	(0.55)	(0.50)
Volunteer work				
Percent valid	99.59	66.03	22.84	11.12
(SE)	(0.08)	(0.61)	(0.53)	(0.49)
Percent missing	0.41	23.55	53.72	22.73
(SE)	(0.08)	(8.81)	(9.77)	(7.56)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)

Table 7.24.--Respondents with “valid” or “missing” responses, by interview date--Continued

Variable	Total	April-June	July-September	October-December
Voted in 1996 presidential election				
Percent valid	99.60	66.03	22.82	11.15
(SE)	(0.08)	(0.61)	(0.53)	(0.49)
Percent missing	0.40	22.41	61.14	16.45
(SE)	(0.08)	(9.01)	(9.48)	(5.38)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Speaks a foreign language				
Percent valid	99.62	66.04	22.86	11.10
(SE)	(0.08)	(0.61)	(0.53)	(0.49)
Percent missing	0.38	19.40	51.50	29.09
(SE)	(0.08)	(8.98)	(9.70)	(8.19)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Any children				
Percent valid	99.74	70.06	19.08	10.85
(SE)	(0.19)	(1.29)	(0.94)	(1.14)
Percent missing	0.26	17.31	0.00	82.69
(SE)	(0.19)	(18.64)	--	(18.64)
Percent valid & missing	100.00	69.93	19.03	11.04
(SE)		(1.29)	(0.93)	(1.14)
Saving money				
Percent valid	99.24	66.08	22.83	11.09
(SE)	(0.11)	(0.61)	(0.53)	(0.49)
Percent missing	0.76	36.44	41.21	22.35
(SE)	(0.11)	(7.30)	(6.85)	(5.56)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Any educational loans				
Percent valid	98.89	66.09	22.69	11.22
(SE)	(0.13)	(0.61)	(0.53)	(0.49)
Percent missing	1.11	45.32	48.20	6.48
(SE)	(0.13)	(6.00)	(5.91)	(2.16)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)

Table 7.24.--Respondents with “valid” or “missing” responses, by interview date--Continued

Variable	Total	April-June	July-September	October-December
Home ownership				
Percent valid	99.33	66.08	22.86	11.06
(SE)	(0.10)	(0.61)	(0.53)	(0.49)
Percent missing	0.67	33.43	39.55	27.02
(SE)	(0.10)	(7.76)	(7.63)	(6.40)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Car ownership				
Percent valid	99.24	66.13	22.83	11.05
(SE)	(0.11)	(0.61)	(0.53)	(0.49)
Percent missing	0.76	30.92	41.91	27.17
(SE)	(0.11)	(7.00)	(7.06)	(6.08)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Any non-educational debt				
Percent valid	98.62	66.09	22.86	11.05
(SE)	(0.15)	(0.61)	(0.53)	(0.49)
Percent missing	1.38	49.49	30.59	19.91
(SE)	(0.15)	(5.24)	(4.84)	(3.82)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Any graduate loan(s)				
Percent valid	96.55	68.65	22.44	8.91
(SE)	(0.42)	(1.04)	(0.93)	(0.65)
Percent missing	3.45	46.10	36.66	17.24
(SE)	(0.42)	(5.39)	(5.05)	(4.13)
Percent valid & missing	100.00	67.87	22.93	9.19
(SE)		(1.01)	(0.91)	(0.65)
Disabilities interfering with work				
Percent valid	99.57	66.07	22.85	11.08
(SE)	(0.08)	(0.61)	(0.53)	(0.49)
Percent missing	0.43	17.90	50.40	31.70
(SE)	(0.08)	(8.15)	(9.04)	(8.43)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)

Table 7.24.--Respondents with “valid” or “missing” responses, by interview date—Continued

Variable	Total	April-June	July-September	October-December
Applied to graduate school since last interview				
Percent valid	99.97	65.87	22.96	11.17
(SE)	(0.02)	(0.61)	(0.53)	(0.49)
Percent missing	0.03	0.00	67.42	32.28
(SE)	(0.02)	--	(26.79)	(26.79)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Marital status				
Percent valid	99.42	66.07	22.80	11.13
(SE)	(0.10)	(0.61)	(0.53)	(0.49)
Percent missing	0.58	29.35	52.11	18.55
(SE)	(0.10)	(8.46)	(8.61)	(5.71)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Taken the GRE				
Percent valid	99.80	65.83	23.01	11.16
(SE)	(0.05)	(0.61)	(0.53)	(0.49)
Percent missing	0.20	79.97	4.17	15.86
(SE)	(0.05)	(12.03)	(4.15)	(11.78)
Percent valid & missing	100.00	65.86	22.97	11.17
(SE)		(0.61)	(0.53)	(0.49)
Satisfaction with job’s promotion opportunity				
Percent valid	98.43	65.83	23.03	11.15
(SE)	(0.14)	(0.64)	(0.55)	(0.51)
Percent missing	1.57	57.00	29.62	13.38
(SE)	(0.14)	(4.19)	(3.67)	(2.99)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)
Satisfaction with job=s pay				
Percent valid	99.65	65.82	23.09	11.09
(SE)	(0.07)	(0.64)	(0.55)	(0.50)
Percent missing	0.35	29.15	33.37	37.48
(SE)	(0.07)	(8.03)	(9.23)	(9.61)
Percent valid & missing	100.00	65.69	23.13	11.18
(SE)		(0.64)	(0.55)	(0.50)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

Table 7.25.-- Percent of respondents with “valid” or “missing” responses, by race/ethnicity

	Total	American Indian Alaskan Native	Asian/ Pacific Islander	Black (non- Hispanic)	Hispanic	White (non- Hispanic)	Other
Took state/professional licensing exams							
Percent valid	99.95	0.59	4.53	5.91	5.08	82.85	1.05
(SE)	(0.02)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Percent missing	0.05	0.00	17.65	0.00	8.40	73.94	0.00
(SE)	(0.02)	--	(16.23)	--	(8.50)	(17.79)	--
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Had prior related job experience							
Percent valid	99.71	0.54	4.30	5.86	4.91	83.34	--
(SE)	(0.07)	(0.09)	(0.53)	(0.53)	(0.45)	(0.88)	--
Percent missing	0.29	0.00	0.00	29.36	4.76	57.68	--
(SE)	(0.07)	--	--	--	--	--	--
Percent valid & missing	100.0	0.54	4.30	5.93	4.91	83.27	--
(SE)		(0.09)	(0.53)	(0.53)	(0.45)	(0.88)	--
Degree required for job							
Percent valid	99.19	0.54	4.32	5.87	4.87	83.33	1.07
(SE)	(0.12)	(0.09)	(0.53)	(0.53)	(0.44)	(0.88)	(0.14)
Percent missing	0.81	0.58	0.30	12.58	10.22	75.57	0.75
(SE)	(0.12)	(0.59)	(0.30)	(4.84)	(5.62)	(6.83)	(0.76)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Received other similar job offers							
Percent valid	99.43	0.50	4.44	6.02	4.85	83.13	1.06
(SE)	(0.11)	(0.09)	(0.54)	(0.55)	(0.44)	(0.89)	(0.14)
Percent missing	0.57	0.00	11.03	17.23	5.62	61.51	4.60
(SE)	(0.11)	--	(7.29)	(7.52)	(2.97)	(9.33)	(2.79)
Percent valid & missing	100.0	0.50	4.48	6.09	4.85	83.01	1.08
(SE)		(0.09)	(0.55)	(0.55)	(0.44)	(0.90)	(0.14)
Degree related to job							
Percent valid	99.76	0.54	4.26	5.88	4.92	83.34	1.06
(SE)	(0.06)	(0.09)	(0.51)	(0.53)	(0.45)	(0.87)	(0.14)
Percent missing	0.24	0.00	14.64	25.06	2.85	54.86	2.59
(SE)	(0.06)	--	(12.93)	(12.37)	(2.77)	(13.55)	(2.62)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)

Table 7.25.-- Percent of respondents with “valid” or “missing” responses, by race/ethnicity—
Continued

	Total	American Indian Alaskan Native	Asian/ Pacific Islander	Black (non- Hispanic)	Hispanic	White (non- Hispanic)	Other
Job has potential							
Percent valid	99.61	0.54	4.28	5.88	4.92	83.33	1.05
(SE)	(0.08)	(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Percent missing	0.39	0.00	6.58	18.68	3.33	68.07	3.34
(SE)	(0.08)	--	(3.81)	(8.21)	(2.32)	(8.94)	(2.38)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Job offers health insurance							
Percent valid	99.70	0.54	4.30	5.88	4.91	83.33	1.04
(SE)	(0.06)	(0.09)	(0.53)	(0.53)	(0.45)	(0.88)	(0.14)
Percent missing	0.30	0.00	0.00	21.94	4.92	64.24	8.90
(SE)	(0.06)	--	--	(9.93)	(3.39)	(10.31)	(5.34)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Ever considered teaching							
Percent valid	99.52	0.45	5.84	4.96	4.68	82.95	1.13
(SE)	(0.11)	(0.10)	(0.74)	(0.47)	(0.47)	(1.01)	(0.17)
Percent missing	0.48	0.00	18.66	2.39	8.38	70.57	0.00
(SE)	(0.11)	--	(10.91)	(2.40)	(4.57)	(11.09)	--
Percent valid & missing	100.0	0.45	5.90	4.94	4.70	82.89	1.12
(SE)		(0.10)	(0.74)	(0.47)	(0.47)	(1.01)	(0.17)
Received training from employer (last 12 months)							
Percent valid	99.17	0.54	4.29	5.85	4.90	83.36	1.06
(SE)	(0.12)	(0.09)	(0.53)	(0.53)	(0.45)	(0.88)	(0.14)
Percent missing	0.83	0.76	7.98	18.06	3.78	67.67	1.76
(SE)	(0.12)	(0.76)	(2.88)	(7.13)	(1.86)	(7.25)	(1.27)
Percent valid & missing	100.0	0.54	4.32	5.95	4.89	83.23	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Volunteer work							
Percent valid	99.59	0.59	4.48	5.84	5.08	82.98	1.03
(SE)	(0.08)	(0.10)	(0.52)	(0.52)	(0.46)	(0.88)	(0.13)
Percent missing	0.41	1.11	18.33	21.88	3.56	49.83	5.29
(SE)	(0.08)	(1.12)	(10.19)	(8.88)	(2.29)	(10.07)	(3.37)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)

Table 7.25.-- Percent of respondents with “valid” or “missing” responses, by race/ethnicity—
 Continued

	Total	American Indian Alaskan Native	Asian/ Pacific Islander	Black (non- Hispanic)	Hispanic	White (non- Hispanic)	Other
Voted in 1996 presidential election							
Percent valid	99.60	0.60	4.45	5.86	5.08	82.98	1.03
(SE)	(0.08)	(0.10)	(0.52)	(0.52)	(0.46)	(0.88)	(0.13)
Percent missing	0.40	0.00	24.78	15.98	5.03	48.81	5.41
(SE)	(0.08)	--	(10.51)	(7.56)	(2.90)	(9.98)	(3.37)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Speaks a foreign language							
Percent valid	99.62	0.60	4.50	5.86	5.09	82.93	--
(SE)	(0.08)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	--
Percent missing	0.38	0.00	13.13	16.70	1.67	61.14	--
(SE)	(0.08)	--	(8.77)	(7.88)	(1.68)	(10.18)	--
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	--
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	--
Any children							
Percent valid	99.74	1.12	3.01	8.36	6.30	80.05	1.15
(SE)	(0.19)	(0.23)	(0.98)	(0.84)	(0.82)	(1.46)	(0.26)
Percent missing	0.26	0.00	0.00	68.17	5.89	8.63	17.31
(SE)	(0.19)	--	(0.00)	(25.71)	(6.94)	(9.96)	(18.64)
Percent valid & missing	100.0	1.12	3.01	8.52	6.30	79.86	1.20
(SE)		(0.23)	(0.98)	(0.86)	(0.82)	(1.46)	(0.27)
Saving money							
Percent valid	99.24	0.60	4.50	5.84	5.10	82.99	0.97
(SE)	(0.11)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.12)
Percent missing	0.76	0.00	4.53	14.52	2.07	63.45	11.22
(SE)	(0.11)	--	(0.53)	(5.16)	(1.47)	(6.91)	(5.70)
Percent valid & missing	100.0	0.59	8.73	5.90	5.08	82.84	1.05
(SE)		(0.10)	(4.89)	(0.52)	(0.46)	(0.89)	(0.13)
Any educational loans							
Percent valid	98.89	0.58	4.49	5.90	5.08	82.95	1.01
(SE)	(0.13)	(0.10)	(0.53)	(0.52)	(0.45)	(0.89)	(0.13)
Percent missing	1.11	1.34	8.68	6.59	5.11	73.42	4.86
(SE)	(0.13)	(0.95)	(3.47)	(3.07)	(3.42)	(5.47)	(2.43)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)

Table 7.25.-- Percent of respondents with “valid” or “missing” responses, by race/ethnicity—
Continued

	Total	American Indian Alaskan Native	Asian/ Pacific Islander	Black (non- Hispanic)	Hispanic	White (non- Hispanic)	Other
Home ownership							
Percent valid	99.33	0.60	4.46	5.86	5.11	83.01	0.96
(SE)	(0.10)	(0.10)	(0.52)	(0.52)	(0.46)	(0.88)	(0.13)
Percent missing	0.67	0.00	14.64	12.16	0.96	58.72	13.52
(SE)	(0.10)	--	(6.81)	(5.20)	(0.96)	(8.00)	(6.31)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Car ownership							
Percent valid	99.24	0.60	4.48	5.86	5.11	82.98	0.97
(SE)	(0.11)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Percent missing	0.76	0.00	11.84	11.08	1.08	65.01	10.99
(SE)	(0.11)	--	(5.63)	(4.63)	(0.87)	(7.39)	(5.56)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Any non-educational debt							
Percent valid	98.62	0.60	4.49	5.84	5.13	83.00	0.94
(SE)	(0.15)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.12)
Percent missing	1.38	0.00	7.87	10.80	1.20	71.38	8.75
(SE)	(0.15)	--	(3.34)	(3.26)	(0.87)	(5.72)	(4.57)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Any graduate loan(s)							
Percent valid	96.55	0.47	4.67	6.16	5.65	81.89	1.16
(SE)	(0.42)	(0.14)	(0.61)	(0.73)	(0.67)	(1.18)	(0.23)
Percent missing	3.45	0.52	9.90	14.80	1.41	70.85	2.53
(SE)	(0.42)	(0.52)	(3.32)	(5.00)	(1.00)	(6.00)	(2.16)
Percent valid & missing	100.0	0.47	4.85	6.46	5.50	81.51	1.21
(SE)		(0.13)	(0.60)	(0.73)	(0.65)	(1.16)	(0.24)
Disabilities interfering with work							
Percent valid	99.57	0.60	4.50	5.84	5.09	82.94	1.02
(SE)	(0.08)	(0.10)	(0.53)	(0.52)	(0.46)	(0.88)	(0.13)
Percent missing	0.43	0.00	11.29	20.34	1.49	59.65	7.24
(SE)	(0.08)	--	(7.84)	(8.11)	(1.47)	(9.29)	(3.87)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)

Table 7.25.-- Percent of respondents with “valid” or “missing” responses, by race/ethnicity--
 Continued

	Total	American Indian Alaskan Native	Asian/ Pacific Islander	Black (non- Hispanic)	Hispanic	White (non- Hispanic)	Other
Applied to graduate school since last interview							
Percent valid	99.97	0.59	4.52	5.91	5.08	82.85	1.05
(SE)	(0.02)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Percent missing	0.03	0.00	35.78	0.00	0.00	64.22	0.00
(SE)	(0.02)	--	(28.14)	--	--	(28.14)	--
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Marital status							
Percent valid	99.42	0.60	4.45	5.87	5.10	83.01	0.98
(SE)	(0.10)	(0.10)	(0.52)	(0.52)	(0.46)	(0.88)	(0.13)
Percent missing	0.58	0.00	18.88	12.45	1.10	55.18	12.39
(SE)	(0.10)	--	(8.29)	(5.58)	(1.11)	(9.04)	(6.93)
Percent valid & missing	100.0	0.59	4.53	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Taken the GRE							
Percent valid	99.80	0.59	4.54	5.89	5.09	82.84	1.05
(SE)	(0.05)	(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Percent missing	0.20	0.00	0.00	13.04	0.00	86.96	0.00
(SE)	(0.05)	--	--	(11.72)	--	(11.72)	--
Percent valid & missing	100.0	0.59	4.54	5.90	5.08	82.84	1.05
(SE)		(0.10)	(0.53)	(0.52)	(0.46)	(0.89)	(0.13)
Satisfaction with job’s promotion opportunity							
Percent valid	98.43	0.54	4.30	5.88	4.93	83.30	1.05
(SE)	(0.14)	(0.09)	(0.53)	(0.53)	(0.45)	(0.89)	(0.14)
Percent missing	1.57	0.49	3.35	8.99	3.76	81.29	2.12
(SE)	(0.14)	(0.36)	(1.49)	(2.53)	(1.32)	(3.14)	(1.08)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)
Satisfaction with job’s pay							
Percent valid	99.65	0.54	4.29	5.87	4.91	83.33	1.05
(SE)	(0.07)	(0.09)	(0.53)	(0.53)	(0.45)	(0.88)	(0.14)
Percent missing	0.35	0.00	2.46	21.25	6.63	65.95	3.71
(SE)	(0.07)	--	(2.44)	(8.80)	(3.72)	(9.11)	(2.63)
Percent valid & missing	100.0	0.54	4.29	5.93	4.91	83.27	1.06
(SE)		(0.09)	(0.52)	(0.53)	(0.45)	(0.88)	(0.14)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond: 93/97.

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